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Report of the 105th & 106th National Conference on Weights and Measures

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as adopted by the 106th National Conference on Weights and Measures 2021

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Abstract

The 105th Annual Meeting of the National Conference on Weights and Measures convened on July 15, 2020 in Williamston, Michigan. The meeting was adjourned to January 10, 2021, in St. Pete Beach, Florida due to lack of a quorum. The theme of the meeting was Building Our Future by Sharing Our Knowledge.

The 106th Annual Meeting of the National Conference on Weights and Measures (NCWM) was held July 18 - 23, 2021, at the Hyatt Regency Rochester in Rochester, New York. The theme of the meeting was Measuring Up to a New Normal.

Reports by the NCWM Board of Directors, Standing Committees, and Special Purpose Committees constitute the major portion of this publication, along with the addresses delivered by Conference officials and other authorities from government and industry.

Special meetings included those of the Meter Manufacturers Association, Packaging and Labeling Subcommittee, Fuels and Lubricants Subcommittee, Associate Membership Committee, Regional Association Meetings, and the Weigh-in-Motion Task Group.

Key words: laws and regulations; legal metrology; meters; scales; specifications and tolerances; training; type evaluation; uniform laws; weights and measures.

Note: The policy of the National Institute of Standards and Technology is to use units of International System of Units (SI) in all its publications. In this publication, however, recommendations received by the NCWM technical committees have been printed as they were submitted, and, therefore, may contain references to conventional (non-metric) units where such units are commonly used in industry practice. Opinions expressed in non-NIST papers are those of the authors and not necessarily those of the National Institute of Standards and Technology. Non-NIST speakers are solely responsible for the content and quality of their material.

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National Conference on Weights and Measures

Annual Report of the 105th and 106th NCWM

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Past Chairmen of the Conference

Conference	Year	Location	Chairman
1st	1905	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
2nd	1906	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
3rd	1907	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
4th	1908	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
	1909	Conference Was Not Held	
5th	1910	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
6th	1911	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
7th	1912	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
8th	1913	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
9th	1914	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
10th	1915	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
11th	1916	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
	1917	Conference Was Not Held	
	1918	Conference Was Not Held	
12th	1919	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
13th	1920	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
14th	1921	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
15th	1922	Washington, D.C.	Dr. S.W. Stratton, Bureau of Standards
16th	1923	Washington, D.C.	Dr. George Burgess, Bureau of Standards
17th	1924	Washington, D.C.	Dr. George Burgess, Bureau of Standards
18th	1925	Washington, D.C.	Dr. George Burgess, Bureau of Standards
19th	1926	Washington, D.C.	Dr. George Burgess, Bureau of Standards
20th	1927	Washington, D.C.	Dr. George Burgess, Bureau of Standards
21st	1928	Washington, D.C.	Dr. George Burgess, Bureau of Standards
22nd	1929	Washington, D.C.	Dr. George Burgess, Bureau of Standards
23rd	1930	Washington, D.C.	Dr. George Burgess, Bureau of Standards
24th	1931	Washington, D.C.	Dr. George Burgess, Bureau of Standards
	1932	Conference Was Not Held	
	1933	Conference Was Not Held	
	1934	Conference Was Not Held	
25th	1935	Washington, D.C.	Dr. Lyman Briggs, National Bureau of Standards
26th	1936	Washington, D.C.	Dr. Lyman Briggs, National Bureau of Standards
27th	1937	Washington, D.C.	Dr. Lyman Briggs, National Bureau of Standards
28th	1938	Washington, D.C.	Dr. Lyman Briggs, National Bureau of Standards

Conference	Year	Location	Chairman
29th	1939	Washington, D.C.	Dr. Lyman Briggs, National Bureau of Standards
30th	1940	Washington, D.C.	Dr. Lyman Briggs, National Bureau of Standards
31st	1941	Washington, D.C.	Dr. Lyman Briggs, National Bureau of Standards
	1942	Conference Was Not Held	
	1943	Conference Was Not Held	
	1944	Conference Was Not Held	
	1945	Conference Was Not Held	
32nd	1946	Washington, D.C.	Dr. E.U. Condon, National Bureau of Standards
33rd	1947	Washington, D.C.	Dr. E.U. Condon, National Bureau of Standards
	1948	Conference Was Not Held	
34th	1949	Washington, D.C.	Dr. E.U. Condon, National Bureau of Standards
35th	1950	Washington, D.C.	Dr. E.U. Condon, National Bureau of Standards
36th	1951	Washington, D.C.	Dr. E.U. Condon, National Bureau of Standards
37th	1952	Washington, D.C.	Dr. A.V. Astin, National Bureau of Standards
38th	1953	Washington, D.C.	Dr. A.V. Astin, National Bureau of Standards
39th	1954	Washington, D.C.	Dr. A.V. Astin, National Bureau of Standards
40th	1955	Washington, D.C.	Dr. A.V. Astin, National Bureau of Standards
41st	1956	Washington, D.C.	Dr. A.V. Astin, National Bureau of Standards
42nd	1957	Washington, D.C.	Dr. A.V. Astin, National Bureau of Standards
43rd	1958	Washington, D.C.	J.P. McBride, MA
44th	1959	Washington, D.C.	C.M. Fuller, CA
45th	1960	Washington, D.C.	H.E. Crawford, FL
46th	1961	Washington, D.C.	R.E. Meek, IN
47th	1962	Washington, D.C.	Robert Williams, NY
48th	1963	Washington, D.C.	C.H. Stender, SC
49th	1964	Washington, D.C.	D.M. Turnbull, WA
50th	1965	Washington, D.C.	V.D. Campbell, OH
51st	1966	Denver, CO	J.F. True, KS
52nd	1967	Washington, D.C.	J.E. Bowen, MA
53rd	1968	Washington, D.C.	C.C. Morgan, IN
54th	1969	Washington, D.C.	S.H. Christie, NJ
55th	1970	Salt Lake City, UT	R.W. Searles, OH
56th	1971	Washington, D.C.	M. Jennings, TN
57th	1972	Washington, D.C.	E.H. Black, CA
58th	1973	Minneapolis, MN	George Johnson, KY
59th	1974	Washington, D.C.	John Lewis, WA
60th	1975	San Diego, CA	Sydney Andrews, FL

Conference	Year	Location	Chairman
61st	1976	Washington, D.C.	Richard Thompson, MD
62nd	1977	Dallas, TX	Earl Prideaux, CO
63rd	1978	Washington, D.C.	James Lyles, VA
64th	1979	Portland, OR	Kendrick Simila, OR
65th	1980	Washington, D.C.	Charles Vincent, TX
66th	1981	St. Louis, MO	Edward Stadolnik, MA
67th	1982	Atlanta, GA	Edward Heffron, MI
68th	1983	Sacramento, CA	Charles Greene, NM
69th	1984	Boston, MA	Sam Hindsman, AR
70th	1985	Washington, D.C.	Ezio Delfino, CA
71st	1986	Albuquerque, NM	George Mattimoe, HI
72nd	1987	Little Rock, AR	Frank Nagele, MI
73rd	1988	Grand Rapids, MI	Darrell Guensler, CA
74th	1989	Seattle, WA	John Bartfai, NY
75th	1990	Washington, D.C.	Fred Gerck, NM
76th	1991	Philadelphia, PA	N. David Smith, NC
77th	1992	Nashville, TN	Sidney Colbrook, IL
78th	1993	Kansas City, MO	Allan Nelson, CT
79th	1994	San Diego, CA	Thomas Geiler, MA
80th	1995	Portland, ME	James Truex, OH
81st	1996	New Orleans, LA	Charles Gardner, NY
82nd	1997	Chicago, IL	Barbara Bloch, CA
83rd	1998	Portland, OR	Steven Malone, NE
84th	1999	Burlington, VT	Aves Thompson, AK
85th	2000	Richmond, VA	Wes Diggs, VA
86th	2001	Washington, D.C.	Louis Straub, MD
87th	2002	Cincinnati, OH	Ronald Murdock, NC
88th	2003	Sparks, NV	Ross Andersen, NY
89th	2004	Pittsburgh, PA	Dennis Ehrhart, AZ
90th	2005	Orlando, FL	Wes Diggs, VA
91st	2006	Chicago, IL	Don Onwiler, NE
92nd	2007	Salt Lake City, UT	Michael Cleary, CA
93rd	2008	Burlington, VT	Judy Cardin, WI
94th	2009	San Antonio, TX	Jack Kane, MT
95th	2010	St. Paul, MN	Randy Jennings, TN
96th	2011	Missoula, MT	Tim Tyson, KS
97th	2012	Portland, ME	Kurt Floren, CA

Conference	Year	Location	Chairman
98th	2013	Louisville, KY	Stephen Benjamin, NC
99th	2014	Detroit, MI	John Gaccione, NY
100th	2015	Philadelphia, PA	Ronald Hayes, MO
101st	2016	Denver, CO	Jerry Buendel, WA
102nd	2017	Pittsburgh, PA	Kristin Macey, CA
103rd	2018	Tulsa, OK	James Cassidy, MA
104th	2019	Milwaukee, WI	Brett Gurney, UT
105th	2020	St. Pete Beach, FL	Craig VanBuren, MI
106th	2021	Rochester, NY	Hal Prince, FL

2019 – 2020 Organizational Chart

NCWM Board of Directors			
Office	Name	Affiliation	Term
Chairman	Craig VanBuren	Michigan	2020
Chairman-Elect	Hal Prince	Florida	2020
Immediate Past Chairman	Stephen Benjamin	North Carolina	2020
Treasurer	Ray Johnson	New Mexico	2020
Active Membership - Central	Ivan Hankins	Iowa	2020
Active Membership - Western	Mahesh Albuquerque	Colorado	2022
Active Membership - Southern	Gene Robertson	Mississippi	2023
Active Membership - Northeastern	Jack Walsh	Town of Wellesley, Massachusetts	2024
At-Large	Shelly Miller	Wisconsin	2021
At-Large	Rebecca Richardson	MARC-IV Consulting	2023
AMC Representative	Chris Guay	Procter and Gamble, Co.	2022
Honorary NCWM President	Dr. Walter G. Copan	NIST Director	NA
Executive Director	Don Onwiler	NCWM	NA
Executive Secretary	Dr. Douglas Olson	NIST, Office of Weights and	NA
NTEP Administrator	Darrell Flocken	NCWM	NA
Measurement Canada Advisor	Carl Cotton	Measurement Canada	NA

National Type Evaluation Program (NTEP)			
Office	Name	Affiliation	Term Ends
Chair	Stephen Benjamin	North Carolina	2020
Member	Craig VanBuren	Michigan	2021
Member	Hal Prince	Florida	2022
Member	Mahesh Albuquerque	Colorado	2023
Member	Jack Walsh	Town of Wellesley, Massachusetts	2024
NTEP Administrator	Darrell Flocken	NCWM	NA

Finance Committee			
Office	Name	Affiliation	Term Ends
Chair	Hal Prince	Florida	2020
Nominated Chair-Elect	Ivan Hankins	Iowa	2021

Treasurer	Ray Johnson	New Mexico	2020
AMC Representative	Chris Guay	Procter and Gamble, Co.	2023
Executive Director	Don Onwiler	NCWM	NA

Laws and Regulations Committee (L&R)			
Office	Name	Affiliation	Term Ends
Chair	Ethan Bogren	Westchester County, New York	2020
Member	Mauricio Mejia	Florida	2021
Member	John McGuire	New Jersey	2022
Member	Doug Rathbun	Illinois	2023
Member	Tim Elliott	Washington	2024
AMC Representative	Prentiss Searles	American Petroleum Institute	2023
Canadian Technical Advisor	Lance Robertson	Measurement Canada	NA
NIST Technical Advisor	David Sefcik	NIST, Office of Weights and Measures	NA
NIST Technical Advisor	Lisa Warfield	NIST, Office of Weights and Measures	NA

Professional Development Committee (PDC)			
Office	Name	Affiliation	Term Ends
Chair	Marc Paquette	Vermont	2020
Member	David Aguayo	San Diego County, California	2021
Member	Brenda Sharkey	South Dakota	2022
Member	Scott Ferguson	Michigan	2023
Member	Paul Floyd	Louisiana	2024
AMC Representative	James Pettinato	Technip FMC	2023
Safety Liaison	Vacant		NA
NIST Liaison	Tina Butcher	NIST, Office of Weights and Measures	NA
Professional Certification Coordinator	Jerry Buendel	Retired	NA

Specifications and Tolerances Committee (S&T)			
Office	Name	Affiliation	Term Ends
Chair	Loren Minnich	Kansas	2024
Member	Jason Flint	New Jersey	2020
Member	Josh Nelson	Oregon	2021
Member	Brad Bachelder	Maine	2022

Member	Jason Glass	Kentucky	2023
Canadian Technical Advisor	Luciano Burtini	Measurement Canada	NA
NIST Technical Advisor	John Barton	NIST, Office of Weights and Measures	NA
NIST Technical Advisor	G. Diane Lee	NIST, Office of Weights and Measures	NA
NTEP Technical Advisor	Mike Manheim	NCWM	NA

Nominating Committee			
Office	Name	Affiliation	Term
Chair	Stephen Benjamin	North Carolina	2020
NEWMA Representative	James Cassidy	Massachusetts	2020
CWMA Representative	Ivan Hankins	Iowa	2020
SWMA Representative	Stephen Benjamin	North Carolina	2020
Member	Ron Hayes	Missouri	2020
Member	Hal Prince	Florida	2020

Credentials Committee			
Office	Name	Affiliation	Term Ends
Chair	David Aguayo	County of San Luis Obispo, California	2020
Member	Stuart Strnad	Texas	2021
Member	Vanessa Benchea	Florida	2022
Coordinator	Darrell Flocken	NCWM	NA

Associate Membership Committee (AMC)			
Office	Name	Affiliation	Term Ends
Chair	Bob Wiese	Northwest Tank and Environmental Services	2020
Vice-Chair	Ron Gibson	Seraphin Test Measure	2020
Secretary / Treasurer	Vacant		2020
Member	Chris Guay	Procter and Gamble, Co.	2020
Member	Rebecca Richardson	MARC – IV Consulting	2020
Member	Prentiss Searles	American Petroleum Institute	2022
Member	Bob Wiese	Northwest Tank and Environmental Services	2022
Member	David Calix	NCR	2023
Member	Bob Murnane	Seraphin Test Measure	2023

Appointed Officials			
Office	Name	Affiliation	Term Ends
Chaplain	Gene Robertson	Mississippi	2020
Parliamentarian	Louis Straub	Fairbanks Scale, Inc.	2020
Presiding Officer	Ethan Bogren	Westchester County, New	2020
Presiding Officer	Tim Chesser	Arkansas	2020
Presiding Officer	Scott Ferguson	Michigan	2020
Presiding Officer	Kevin Schnepf	California	2020
Sergeant-at-Arms	Brian Eden	Florida	2021
Sergeant-at-Arms	Ben Hair	Florida	2021

Fuels and Lubricants Subcommittee (FALS)		
Office	Name	Affiliation
Chair	Bill Striejewski	Nevada
Vice-Chair	Ron Hayes	Missouri
Vice-Chair	Randy Jennings	Tennessee
Secretary	Rebecca Richardson	MARC – IV Consulting
Vice-Secretary	Vanessa Benchea	Florida
NIST Technical Advisor	David Sefcik	NIST, Office of Weights and Measures
NIST Technical Advisor	Lisa Warfield	NIST, Office of Weights and Measures
Advisory Member	Curtis Williams	Retired
Public Sector Member	Mahesh Albuquerque	Colorado
Public Sector Member	David Au	Georgia
Public Sector Member	Vanessa Benchea	Florida
Public Sector Member	Stephen Benjamin	North Carolina
Public Sector Member	Tim Elliott	Washington
Public Sector Member	Mike Harrington	Iowa
Public Sector Member	Lori Jacobson	South Dakota
Public Sector Member	Allan Morrison	California
Public Sector Member	Doug Rathbun	Illinois
Public Sector Member	Kevin Schnepf	California
Public Sector Member	Brenda Sharkey	South Dakota
Public Sector Member	Bill Striejewski	Nevada
Public Sector Member	Charles Stutesman	Kansas
Public Sector Member	Kevin Upschulte	Missouri
Public Sector Member	Timothy White	Michigan
Public Sector Member	Michelle Wilson	Arizona
Private Sector Member	Kevin Adlaf	ADM
Private Sector Member	Holly Alfano	Independent Lubricant Manufacturers

Private Sector Member	Teresa Alleman	National Renewable Energy Laboratory
Private Sector Member	Matt Bjornson	Bjornson Oil Company
Private Sector Member	Joy Black	The Lubrizol Corp.
Private Sector Member	Dale Bohn	Flint Hills Resources, LP
Private Sector Member	Frank Bradley	ET Products LLC
Private Sector Member	Chuck Corr	Retired
Private Sector Member	Davis Cosey	Davis Oil Company
Private Sector Member	Kelly Davis	Renewable Fuels Association
Private Sector Member	Jacki Fee	Cargill
Private Sector Member	Scott Fenwick	National Biodiesel Board
Private Sector Member	Kevin Ferrick	American Petroleum Institute
Private Sector Member	Rick Fragnito	Shell
Private Sector Member	Jennifer Green	CITGO Petroleum Corporation
Private Sector Member	John Harkins	Energy Transfer
Private Sector Member	Marilyn Herman	Herman and Associates
Private Sector Member	Jason Holmes	BASF Corporation
Private Sector Member	William Hornbach	Chevron Global Downstream, LLC
Private Sector Member	Joanna Johnson	Automotive Oil Change Association
Private Sector Member	Brian Kernke	Loves Travel Stops
Private Sector Member	Russ Kinzig	Kinder Morgan Products Pipelines
Private Sector Member	Stephen Kirby	General Motors
Private Sector Member	David A. Kovach	BP Products
Private Sector Member	Mike Kunselman	Center for Quality Assurance
Private Sector Member	Jeffrey Leiter	Bassman, Mitchell, Alfano & Leiter Chtd.
Private Sector Member	Russ Lewis	Marathon Petroleum, LLC
Private Sector Member	Scott Mason	Phillips 66
Private Sector Member	Beverly Michels	BP Products
Private Sector Member	Kristi Moore	KMoore Consulting, LLC
Private Sector Member	Keith Penn	Colonial Pipeline Company
Private Sector Member	Derek Regal	Tesoro Companies, Inc.
Private Sector Member	Jim Rocco	Petroleum Marketers Association of America
Private Sector Member	Prentiss Searles	American Petroleum Institute
Private Sector Member	Matthew Sheehan	Chevron USA, Inc.
Private Sector Member	Dr. Prasad Tumati	Haltermann Solutions
Private Sector Member	Marie Valentine	Toyota - TEMA - TTC
Private Sector Member	Steve Vander Griend	ICM, Inc.

Packaging and Labeling Subcommittee (PALS)		
Office	Name	Affiliation
Chair	Chris Guay	Procter and Gamble, Co.
NIST Technical Advisor	David Sefcik	NIST, Office of Weights and Measures
Public Sector – Central	Nicholas Owens	Stark County Weights and Measures,
Public Sector – Northeastern	Frank Greene	Connecticut
Public Sector – Southern	Hal Prince	Florida
Public Sector – Western	Angela Godwin	County of Ventura, California
Private Sector Member	Ann Boeckman	Kraft Food Group, Inc.
Private Sector Member	Krister Hard af Segerstad	IKEA North America Services, LLC
Private Sector Member	Zina Juroch	Pier 1 Imports

Safety Subcommittee		
Office	Name	Affiliation
Chair	Vacant	
Public Sector Member	Jason Flint	New Jersey
Public Sector Member	Elizabeth Koncki	Maryland
Public Sector Member	Brenda Sharkey	South Dakota
Public Sector Member	Mike Sikula	New York
Private Sector Member	Tisha Arriaga	Marathon Petroleum, LLC
Private Sector Member	Bill Callaway	Crompco
Private Sector Member	Remy Cano	Northwest Tank and Environmental
Private Sector Member	Robert LaGasse	Mulch and Soil Council

Bylaw Review Task Group		
Office	Name	Affiliation
Chair	Craig VanBuren	Michigan
Executive Director	Don Onwiler	NCWM
Executive Secretary	Dr. Douglas Olson	NIST, Office of Weights and Measures
Parliamentarian	Lou Straub	Fairbanks Scales, Inc.
Private Sector Member	Chuck Corr	Chuck Corr Consulting
Private Sector Member	Scott Fenwick	National Biodiesel Board

Cannabis Task Group		
Office	Name	Affiliation
Co-Chair	James Cassidy	Massachusetts
Co-Chair	Charles Rutherford	CPR Squared, Inc.
Public Sector Member	Brad Bachelder	Maine
Public Sector Member	Loren Kipp Blauer	Nevada
Public Sector Member	Stacy Carlsen	Marin County, California
Public Sector Member	Tim Chesser	Arkansas
Public Sector Member	Mark Ciociolo	City of Worcester, Massachusetts
Public Sector Member	Jason Flint	New Jersey
Public Sector Member	Kurt Floren	Los Angeles County, California
Public Sector Member	Paul Floyd	Louisiana
Public Sector Member	Mike Gower	Nevada
Public Sector Member	Elaine Grillo	City of Boston, Massachusetts
Public Sector Member	Ivan Hankins	Iowa
Public Sector Member	Mike Harrington	Iowa
Public Sector Member	Steven Harrington	Oregon
Public Sector Member	Ryanne Hartman	Michigan
Public Sector Member	Kristin Macey	California
Public Sector Member	Mike Mann	Washington
Public Sector Member	Mauricio Mejia	Florida
Public Sector Member	Randall Morrison	Erie County, New York
Public Sector Member	Doug Musick	Kansas
Public Sector Member	Angel Nazario	City of Boston, Massachusetts
Public Sector Member	Josh Nelson	Oregon
Public Sector Member	Laurence Nolan	Los Angeles County, California
Public Sector Member	Ken Ramsburg	Maryland
Public Sector Member	William Rigby	Utah
Public Sector Member	Kate Smetana	Colorado
Public Sector Member	Dedrick Stephens	City of Cleveland, Ohio
Public Sector Member	Ron Valinski	City of Worcester, Massachusetts
Public Sector Member	James Willis	New York
Public Sector Member	Michelle Wilson	Arizona
Public Sector Member	John Young	Yolo County, California
Private Sector Member	David Calix	NCR
Private Sector Member	Michael Bronstein	ATACH
Private Sector Member	Brian Duncan	ECRS

Private Sector Member	Eric Golden	Cardinal Scale Manufacturing, Co.
Private Sector Member	Chris Guay	Procter and Gamble, Co.
Private Sector Member	Richard Guild	The Scale People, Inc.
Private Sector Member	George Hatziemanuel	Ohaus Corporation
Private Sector Member	Joanna Johnson	Johnson Policy Associates, Inc.

Credit Card Skimmer Task Group		
Office	Name	Affiliation
Chair	Hal Prince	Florida
Public Sector Member	James Cassidy	Massachusetts
Public Sector Member	Mike Harrington	Iowa
Public Sector Member	Eric Janke	South Dakota
Public Sector Member	Joel Maddux	Virginia
Public Sector Member	John McGuire	New Jersey
Public Sector Member	Mike Sikula	New York
Public Sector Member	Craig VanBuren	Michigan
Public Sector Member	Scott Wagner	Colorado
Public Sector Member	Michelle Wilson	Arizona
Private Sector Member	Paige Anderson	NACS
Private Sector Member	Owen DeWitt	FlintLoc Technologies, LLC
Private Sector Member	Randy Moses	Wayne Fueling Systems
Private Sector Member	Brent Price	Gilbarco, Inc.

Field Standards Task Group		
Office	Name	Affiliation
Chair	Jason Glass	Kentucky
NIST Technical Advisor	G. Diane Lee	NIST, Office of Weights and Measures
Public Sector Member	Brad Bachelder	Maine
Public Sector Member	Randy Burns	Arkansas
Public Sector Member	Josh Nelson	Oregon
Public Sector Member	Kyle Pierson	New Jersey
Public Sector Member	Greg Vander Platts	Minnesota
Private Sector Member	Michael Keilty	Endress + Hauser Flowtec AG, USA
Private Sector Member	Henry Oppermann	Weights and Measures Consulting, LLC

Private Sector Member	Brandon Meiwes	Dairy Farmers of America
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Milk Meter Tolerance Task Group		
Office	Name	Affiliation
Chair	Charlie Stutesman	Kansas
NTEP Technical Advisor	Mike Manheim	NCWM
NIST Technical Advisor	G. Diane Lee	NIST, Office of Weights and Measures
Canadian Technical Advisor	Luciano Burtini	Measurement Canada
Private Sector Member	Bob Fradette	Agri-Mark
Public Sector Member	Jeff Cambeis	California
Public Sector Member	Jim Willis	New York
Private Sector Member	Leigh Hamilton	Piper Systems
Private Sector Member	Carey McMahon	Poul Tarp A/S

Promotional Toolkit Task Group		
Office	Name	Affiliation
Chair	Stephen Benjamin	North Carolina
Public Sector Member	Jerry Buendel	Washington
Public Sector Member	Kurt Floren	Los Angeles County, California
Private Sector Member	Bill Callaway	Crompco

Verification Scale Division (e) Task Group		
Office	Name	Affiliation
Chair	Doug Musick	Kansas
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	John Barton	NIST, Office of Weights and Measures
Canadian Technical Advisor	Luciano Burtini	Measurement Canada
Public Sector Member	Mark Bickal	Iowa
Public Sector Member	Anthony Bong Lee	Orange County, California
Public Sector Member	Steve Timar	New York

Public Sector Member	Howard Tucker	Florida
Private Sector Member	Jan Konijnenburg	Rice Lake Weighing Systems, Inc.
Private Sector Member	Richard Suiter	Richard Suiter Consulting
At-Large Member	Ross Andersen	Retired

Weigh-in-Motion Task Group		
Office	Name	Affiliation
Co-Chair	Tim Chesser	Arkansas
Co-Chair	Alan Walker	Florida
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	Rick Harshman	NIST, Office of Weights and Measures
Public Sector Member	John Barton	NIST, Office of Weights and Measures
Public Sector Member	Jason Flint	New Jersey
Public Sector Member	Greg Gholston	Mississippi
Public Sector Member	Lenny Goebel	Illinois
Public Sector Member	John McGuire	New Jersey
Public Sector Member	Jason Smith	South Dakota
Private Sector Member	Jon Arnold	Intercomp Company
Private Sector Member	James Faas	YRC Freight
Private Sector Member	Brad Fryburger	Southern II Scale
Private Sector Member	Eric Golden	Cardinal Scale Manufacturing, Co.
Private Sector Member	Joe Grell	Rice Lake Weighing Systems, Inc.
Private Sector Member	Randy Hanson	International Road Dynamics
Private Sector Member	John Lawn	Rinstrum, Inc.
Private Sector Member	Louis Straub	Fairbanks Scale, Inc.
Private Sector Member	Richard Suiter	Richard Suiter Consulting
Private Sector Member	Brian Taylor	Intelligent Imaging Systems
Private Sector Member	Sam Wimsett	Cardinal Scale Manufacturing, Co.
Private Sector Member	Matt Young	Intercomp Company

NTEP Belt-Conveyor Scale Sector		
Office	Name	Affiliation

Chair	Peter Sirrico	Thayer Scale / Hyer Industries
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	John Barton	NIST, Office of Weights and Measures
Public Sector Member	Tina Butcher	NIST, Office of Weights and Measures
Public Sector Member	Zacharias Tripoulas	Maryland
Private Sector Member	Jan Konijnenburg	Rice Lake Weighing Systems, Inc.

NTEP Grain Analyzer Sector		
Office	Name	Affiliation
Chair	Karl Cunningham	Illinois
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	G. Diane Lee	NIST, Office of Weights and Measures
Advisory Member	Cassie Eigenmann	Retired
Public Sector Member	Randy Burns	Arkansas
Public Sector Member	Tina Butcher	NIST, Office of Weights and Measures
Public Sector Member	Ivan Hankins	Iowa
Public Sector Member	Thomas Hughes	Missouri
Public Sector Member	Jason Jordan	USDA, FGIS, Technical Services Division
Public Sector Member	April Lee	North Carolina
Public Sector Member	Loren Minnich	Kansas
Private Sector Member	Jeffrey Adkisson	Grain and Feed Association of Illinois
Private Sector Member	Rachel Beiswenger	TSI Incorporated
Private Sector Member	Martin Clements	The Steinlite Corporation
Private Sector Member	Andrew Gell	Foss North America
Private Sector Member	Charles Hurburgh, Jr.	Iowa State University
Private Sector Member	Jess McCluer	National Grain and Feed Association
Private Sector Member	Thomas Runyon	Seedburo Equipment Co.

NTEP Measuring Sector		
Office	Name	Affiliation
Chair	Michael Keilty	Endress + Hauser Flowtec AG, USA
NTEP Technical Advisor	Darrell Flocken	NCWM

NIST Technical Advisor	Tina Butcher	NIST, Office of Weights and Measures
Public Sector Member	Luciano Burtini	Measurement Canada
Public Sector Member	Louis Martinet	Measurement Canada
Public Sector Member	Tina Butcher	NIST, Office of Weights and Measures
Public Sector Member	John Roach	California
Private Sector Member	Steve Bar	Bennett Pump Company
Private Sector Member	Marc Buttler	Emerson Process Management / Micro Motion
Private Sector Member	Craig Cavanaugh	Tuthill Transfer Systems
Private Sector Member	Rodney Cooper	Brodie International
Private Sector Member	Constantine Cotsoradis	Flint Hills Resources
Private Sector Member	Ronnell Gallon	Zenner Performance Meters, Inc.
Private Sector Member	John Hathaway	Murray Equipment
Private Sector Member	Dmitri Karimov	Liquid Controls, LLC
Private Sector Member	Douglas Long	RDM Industrial Electronics
Private Sector Member	Richard Miller	FMC Technologies Measurement Solutions, Inc.
Private Sector Member	Randy Moses	Wayne Fueling Systems
Private Sector Member	Andre Noel	Neptune Technology Group, Inc.
Private Sector Member	Adam Oldham	Insite360
Private Sector Member	Robin Parsons	Parafour Innovations, LLC
Private Sector Member	Brent Price	Gilbarco, Inc.

NTEP Software Sector		
Office	Name	Affiliation
Chair	James Pettinato	Technip FMC
NTEP Technical Advisor	Darrell Flocken	NCWM
Technical Advisor	Vere Miller	Mettler-Toledo, LLC
Secretary	Teri Gulke	Liquid Controls, LLC
Public Sector Member	Andrei Brezoica	California
Public Sector Member	Tom Buck	Ohio
Public Sector Member	Luciano Burtini	Measurement Canada
Public Sector Member	Katya Delak	NIST, Office of Weights and Measures
Public Sector Member	Jeff Gibson	Ohio
Public Sector Member	Eric Morabito	New York
Public Sector Member	Cinthia Reyes	California
Public Sector Member	John Roach	California

Public Sector Member	Zacharias Tripoulas	Maryland
Private Sector Member	Mary Abens	Emerson Process Management
Private Sector Member	John Atwood	Tyson Foods
Private Sector Member	Gary Benjamin	NCR Corporation
Private Sector Member	Kevin Detert	Avery Weigh-Tronix
Private Sector Member	Brian Duncan	ECRS
Private Sector Member	Andrew Gell	Foss North America
Private Sector Member	Keith Harper	Gencor Industries, Inc.
Private Sector Member	Jan Konijnenburg	Rice Lake Weighing Systems, Inc.
Private Sector Member	Dominic Meyer	KSi Conveyors, Inc.
Private Sector Member	Richard Miller	FMC Technologies Measurement Solutions, Inc.
Private Sector Member	Adam Oldham	Insite360
Private Sector Member	Mike Roach	VeriFone
Private Sector Member	David Vande Berg	Vande Berg Scales
Private Sector Member	John Wind	Ossid LLC
Private Sector Member	Kraig Wooddell	Hobart

NTEP Weighing Sector		
Office	Name	Affiliation
Chair	Rob Upright	VPG Transducers
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	Rick Harshman	NIST, Office of Weights and Measures
Advisory Member	Robert Feezor	Retired
Public Sector Member	Tom Buck	Ohio
Public Sector Member	Tina Butcher	NIST, Office of Weights and Measures
Public Sector Member	Kevin Chesnutwood	NIST
Public Sector Member	Nathan Gardner	Oregon
Public Sector Member	Marcus Harwitz	USDA, GIPSA, FGIS
Public Sector Member	Robert Meadows	Kansas
Public Sector Member	Loren Minnich	Kansas
Public Sector Member	Eric Morabito	New York
Public Sector Member	Cinthia Reyes	California
Public Sector Member	Zacharias Tripoulas	Maryland
Public Sector Member	Pascal Turgeon	Measurement Canada
Public Sector Member	Juana Williams	NIST, Office of Weights and Measures

Private Sector Member	Sprague Ackley	Digimarc
Private Sector Member	Steven Beitzel	Systems Associates, Inc.
Private Sector Member	Neil Copley	Thurman Scale Co.
Private Sector Member	Bill Danderand	FedEx
Private Sector Member	Scott Davidson	Mettler-Toledo, LLC
Private Sector Member	Brian Duncan	ECRS
Private Sector Member	Mitchell Eyles	Flintec, Inc.
Private Sector Member	Eric Golden	Cardinal Scale Manufacturing, Co.
Private Sector Member	Jon Heinlein	Transcell Technology, Inc.
Private Sector Member	Scott Henry	Zebra Technologies
Private Sector Member	Sam Jalahej	Totalcomp, Inc.
Private Sector Member	Jan Konijnenburg	Rice Lake Weighing Systems, Inc.
Private Sector Member	John Lawn	Rinstrum, Inc.
Private Sector Member	Edward Luthy	Schenck Process Transport N.A.
Private Sector Member	Thomas Rice	Mettler-Toledo, LLC
Private Sector Member	Kyle Schaffer	Tufner Weighing Systems
Private Sector Member	Louis Straub	Fairbanks Scale, Inc.
Private Sector Member	Russ Vires	Mettler-Toledo, LLC
Private Sector Member	Jerry Wang	A&D Engineering, Inc.
Private Sector Member	John Wind	Ossid LLC

NTEP EVSE Work Group		
Office	Name	Affiliation
Chair	Andrei Moldoveanu	NEMA
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	Juana Williams	NIST, Office of Weights and Measures
Public Sector Member	Tom Buck	Ohio
Public Sector Member	John Roach	California
Private Sector Member	Dave Parmelee	Control Module, Inc.
Private Sector Member	Wolfram Teppan	LEM Intellectual Property SA

NTEP MDMD Work Group		
Office	Name	Affiliation
Chair	Chris Senneff	Rice Lake Weighing Systems, Inc.
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	Rick Harshman	NIST, Office of Weights and Measures
Public Sector Member	Tom Buck	Ohio
Public Sector Member	Jeff Fantozzi	Ohio
Public Sector Member	Jeff Gibson	Ohio
Public Sector Member	Mike Kelley	Ohio
Public Sector Member	Pascal Turgeon	Measurement Canada, Policy/Regulations Group
Public Sector Member	Paige Vinten	Measurement Canada
Private Sector Member	Sprague Ackley	Digimarc
Private Sector Member	Jeff Cooper	National Motor Freight Traffic Association
Private Sector Member	Bill Danderand	FedEx
Private Sector Member	Scott Davidson	Mettler-Toledo, LLC
Private Sector Member	Michael Eichenberg	FreightSnap, LLC
Private Sector Member	James Faas	YRC Freight
Private Sector Member	Scott Henry	Zebra Technologies
Private Sector Member	Robert Kennington	Cubiscan
Private Sector Member	Jan Konijnenburg	Rice Lake Weighing Systems, Inc.
Private Sector Member	Scott Murchison	Zebra Technologies
Private Sector Member	Don Newell	Newell Enterprises, LLC
Private Sector Member	Sameer Parmar	SICK, Inc.
Private Sector Member	Drew Parrett	Cognex
Private Sector Member	Tony Romeo	Datalogic
Private Sector Member	Mike Stutler	United Parcel Service
Private Sector Member	Richard Suiter	Richard Suiter Consulting
Private Sector Member	Russ Vires	Mettler-Toledo, LLC
Private Sector Member	Xin Wang	Amazon
Private Sector Member	Scott Wigginton	United Parcel Service

Central Weights and Measures Association (CWMA) (www.cwma.net)				
States	Illinois Indiana Iowa	Kansas Michigan Minnesota	Missouri Nebraska	Ohio South Dakota Wisconsin

	North Dakota	
Contact	Ms. Sherry Turvey Kansas Department of Agriculture	(785) 564-6682 sherry.turvey@ks.gov
Interim Meeting	May 5-8, 2021	Wisconsin Dells, Wisconsin
Annual Meeting	TBD, 2021	TBD

Northeastern Weights and Measures Association (NEWMA) (www.newma.us)		
States	Connecticut Maine Massachusetts	New Hampshire New Jersey New York Pennsylvania Puerto Rico Rhode Island Vermont
Contact	Mr. James Cassidy Commonwealth of Massachusetts	(617) 727-3480 james.cassidy@mass.gov
Annual Meeting	TBD, 2021	TBD
Interim Meeting	TBD, 2021	TBD

Southern Weights and Measures Association (SWMA) (www.swma.org)		
States	Alabama Arkansas Delaware	District of Columbia Florida Georgia Kentucky Louisiana Maryland Mississippi North Carolina Carolina Oklahoma South Carolina Tennessee Texas U.S. Virgin Islands Virginia West Virginia
Contact	Mr. Bobby Fletcher Louisiana Department of Agriculture	(225) 925-3780 bfletcher@ldaf.state.la.us
Annual Meeting	October 10-13, 2021	New Orleans, Louisiana

Western Weights and Measures Association (WWMA) (www.westernwma.org)		
States	Alaska Arizona California	Colorado Hawaii Idaho Montana Nevada New Mexico Oregon Utah Washington Wyoming
Contact	Mr. Mahesh Albuquerque Colorado Division of Oil and Public Safety	(303) 318-8502 mahesh.albuquerque@state.co.us
Annual Meeting	September 26-30, 2021	Golden, Colorado

2020 – 2021 Organization Chart

NCWM Board of Directors			
Office	Name	Affiliation	Term Ends
Chairman	Hal Prince	Florida	2021
Chairman-Elect	Ivan Hankins	Iowa	2021
Immediate Past Chair	Craig VanBuren	Michigan	2021
Treasurer	Ray Johnson	New Mexico	2023
Active Membership - Western	Mahesh Albuquerque	Colorado	2022
Active Membership - Southern	Gene Robertson	Mississippi	2023
Active Membership - Northeastern	Jack Walsh	Town of Wellesley, Massachusetts	2024
Active Membership - Central	Loren Minnich	Kansas	2025
At-Large	Rachelle Miller	Wisconsin	2021
At-Large	Rebecca Richardson	MARC-IV Consulting	2023
AMC Representative	Chris Guay	Associate	2022
Honorary NCWM President	Dr. James Olthoff	Acting in Capacity of NIST Director	NA
Executive Director	Don Onwiler	NCWM	NA
Executive Secretary	Dr. Douglas Olson	NIST, Office of Weights & Measures	NA
NTEP Administrator	Darrell Flocken	NCWM	NA
Measurement Canada Advisor	Carl Cotton	Measurement Canada	NA

National Type Evaluation Program (NTEP)			
Office	Name	Affiliation	Term Ends
Chair	Craig VanBuren	Michigan	2021
Member	Hal Prince	Florida	2022
Member	Ivan Hankins	Iowa	2022
Member	Mahesh Albuquerque	Colorado	2023
Member	Jack Walsh	Town of Wellesley, Massachusetts	2024
NTEP Administrator	Darrell Flocken	NCWM	NA

Finance Committee			
Office	Name	Affiliation	Term Ends
Chair	Ivan Hankins	Iowa	2021
Nominated Chairman-Elect	Mahesh Albuquerque	Colorado	2022

Treasurer	Ray Johnson	New Mexico	2023
AMC Representative	Chris Guay	Associate	2023
Executive Director	Don Onwiler	NCWM	NA

Laws and Regulations Committee (L&R)			
Office	Name	Affiliation	Term Ends
Chair	John McGuire	New Jersey	2022
Member	Mauricio Mejia	Florida	2021
Member	Doug Rathbun	Illinois	2023
Member	Tim Elliott	Washington	2024
Member	Tory Brewer	West Virginia	2025
AMC Representative	Prentiss Searles	API	2023
Canadian Technical Advisor	Lance Robertson	Measurement Canada	NA
NIST Technical Advisor	David Sefcik	NIST, Office of Weights and Measures	NA
NIST Technical Advisor	Lisa Warfield	NIST, Office of Weights and Measures	NA

Professional Development Committee (PDC)			
Office	Name	Affiliation	Term Ends
Chair	David Aguayo	San Luis Obispo County, California	2021
Member	Gary Milton	Virginia	2022
Member	Scott Ferguson	Michigan	2023
Member	Paul Floyd	Louisiana	2024
Member	Ethan Bogren	Westchester County, New York	2025
AMC Representative	James Pettinato	Technip FMC	2023
Safety Liaison	Vacant		NA
NIST Liaison	Tina Butcher	NIST, Office of Weights and Measures	NA
Professional Certification Coordinator	Jerry Buendel	Retired	NA

Specifications and Tolerances Committee (S&T)			
Office	Name	Affiliation	Term Ends
Chair	Josh Nelson	Oregon	2021
Member	Brad Bachelder	Maine	2022

Member	Jason Glass	Kentucky	2023
Member	Nick Owens	Stark County, Ohio	2024
Member	Jason Flint	New Jersey	2025
Canadian Technical Advisor	Louis Martinet	Measurement Canada	NA
NIST Technical Advisor	John Barton	NIST, Office of Weights and Measures	NA
NIST Technical Advisor	G. Diane Lee	NIST, Office of Weights and Measures	NA
NCWM Technical Advisor	Allen Katalinic	NCWM	NA
NCWM Technical Advisor	Mike Manheim	NCWM	NA

Nominating Committee			
Office	Name	Affiliation	Term Ends
Chair	Craig VanBuren	Michigan	2021
Member	Mahesh Albuquerque	Colorado	2021
Member	Stephen Benjamin	North Carolina	2021
Member	James Cassidy	Massachusetts	2021
Member	Ivan Hankins	Iowa	2021
Member	Marc Paquette	Vermont	2021
Member	Gene Robertson	Mississippi	2021

Credentials Committee			
Office	Name	Affiliation	Term Ends
Chair	Stuart Strnad	Texas	2021
Member	Vanessa Benchea	Florida	2022
Member	Angel Nazario	City of Boston, Massachusetts	2023
Coordinator	Darrell Flocken	NCWM	NA

Associate Membership Committee (AMC)			
Office	Name	Affiliation	Term Ends
Chair	Bob Wiese	Northwest Tank and Environmental Services	2020
Vice-Chair	Ron Gibson	Seraphin Test Measure	2020
Secretary / Treasurer	Vacant		2020
Member	Chris Guay	Associate	2020
Member	Rebecca Richardson	MARC-IV Consulting	2020
Member	Prentiss Searles	API	2022
Member	Bob Wiese	Northwest Tank and Environmental Services	2022
Member	David Calix	NCR	2023
Member	Bob Murnane	Seraphin Test Measure	2023

Appointed Officials			
Office	Name	Affiliation	Term Ends
Chaplain	Gene Robertson	Mississippi	2021
Parliamentarian	Louis Straub	Fairbanks Scale, Inc.	2021
Presiding Officer	Ethan Bogren	Westchester County, New York	2021
Presiding Officer	Tim Chesser	Arkansas	2021
Presiding Office	Mike Harrington	Iowa	2021
Presiding Officer	Scott Simmons	Colorado	2021
Sergeant-at-Arms	Matthew Fleming	New York	2021
Sergeant-at-Arms	Michael Konyak	New York	2021

Fuels and Lubricants Subcommittee (FALS)		
Office	Name	Affiliation
Chair	Bill Striejewski	Nevada
Vice-Chair	Randy Jennings	R Jennings
Secretary	Rebecca Richardson	MARC-IV Consulting
Vice-Secretary	Vanessa Benchea	Florida
NIST Technical Advisor	David Sefcik	NIST, Office of Weights and Measures
NIST Technical Advisor	Lisa Warfield	NIST, Office of Weights and Measures
Advisory Member	Curtis Williams	Retired
Public Sector Member	Mahesh Albuquerque	Colorado
Public Sector Member	David Au	Georgia
Public Sector Member	Vanessa Benchea	Florida
Public Sector Member	Stephen Benjamin	North Carolina
Public Sector Member	Tim Elliott	Washington
Public Sector Member	Mike Harrington	Iowa
Public Sector Member	Steve Harrington	Oregon
Public Sector Member	Ron Hayes	Missouri
Public Sector Member	Lori Jacobson	Retired
Public Sector Member	Allan Morrison	California
Public Sector Member	Doug Rathbun	Illinois
Public Sector Member	Kevin Schnepf	California
Public Sector Member	Brenda Sharkey	South Dakota

Public Sector Member	Bill Striejewski	Nevada
Public Sector Member	Charles Stutesman	Kansas
Public Sector Member	Kevin Upschulte	Missouri
Public Sector Member	Timothy White	Michigan
Public Sector Member	Michelle Wilson	Arizona
Public Sector Member	Vince Wolpert	Arizona
Private Sector Member	Kevin Adlaf	ADM
Private Sector Member	Holly Alfano	Independent Lubricant Manufacturers Association
Private Sector Member	Teresa Alleman	National Renewable Energy Laboratory
Private Sector Member	Joy Black	The Lubrizol Corp.
Private Sector Member	Dale Bohn	Flint Hills Resources, LP
Private Sector Member	Scott Boorse	PEI
Private Sector Member	Frank Bradley	ET Products LLC
Private Sector Member	Kari Cook	POET
Private Sector Member	Chuck Corr	Chuck Corr Consulting
Private Sector Member	Davis Cosey	Davis Oil Company
Private Sector Member	Kelly Davis	Renewable Fuels Association
Private Sector Member	Jacki Fee	Cargill
Private Sector Member	Scott Fenwick	National Biodiesel Board
Private Sector Member	Kevin Ferrick	American Petroleum Institute
Private Sector Member	Rick Fragnito	Shell
Private Sector Member	Jennifer Green	CITGO Petroleum Corporation
Private Sector Member	John Harkins	Energy Transfer
Private Sector Member	Jeff Harmening	API
Private Sector Member	Marilyn Herman	Herman and Associates
Private Sector Member	Joanna Johnson	Automotive Oil Change Association
Private Sector Member	Brian Kernke	Loves Travel Stops
Private Sector Member	Russ Kinzig	Kinder Morgan Products Pipelines
Private Sector Member	Stephen Kirby	General Motors
Private Sector Member	David A. Kovach	BP Products
Private Sector Member	Mike Kunselman	Center for Quality Assurance
Private Sector Member	Russ Lewis	Marathon Petroleum, LLC
Private Sector Member	Scott Mason	Phillips 66

Private Sector Member	Beverly Michels	BP Products
Private Sector Member	Kristi Moore	KMoore Consulting, LLC
Private Sector Member	Jim Rocco	Petroleum Marketers Association of America
Private Sector Member	Prentiss Searles	API
Private Sector Member	Matthew Sheehan	Chevron USA, Inc.
Private Sector Member	Dr. Prasad Tumati	Haltermann Solutions
Private Sector Member	Marie Valentine	Toyota - TEMA - TTC
Private Sector Member	Steve Vander Griend	ICM, Inc.

Packaging and Labeling Subcommittee		
Office	Name	Affiliation
Chair	Chris Guay	Associate
NIST Technical Advisor	David Sefcik	NIST, Office of Weights and Measures
Public Sector Member	Angela Godwin	Ventura County, California
Public Sector Member	John McGuire	New Jersey
Public Sector Member	Hal Prince	Florida
Public Sector Member	Nicholas Owens	Stark County, Ohio
Private Sector Member	Ann Boeckman	Kraft Food Group, Inc.
Private Sector Member	Krister Hard af Segerstad	IKEA North America Services, LLC
Private Sector Member	Zina Juroch	Pier 1 Imports

Safety Subcommittee		
Office	Name	Affiliation
Chair	Vacant	
Public Sector Member	Jason Flint	New Jersey
Public Sector Member	Elizabeth Koncki	Maryland
Public Sector Member	Mike Sikula	New York
Private Sector Member	Tisha Arriaga	Marathon Petroleum, LLC
Private Sector Member	Bill Callaway	Crompco
Private Sector Member	Remy Cano	Northwest Tank and Environmental Services
Private Sector Member	Robert LaGasse	Mulch and Soil Council

Bylaw Review Task Group		
Office	Name	Affiliation
Chair	Craig VanBuren	Michigan
Executive Director	Don Onwiler	NCWM
Executive Secretary	Dr. Douglas Olson	NIST, Office of Weights and Measures
Parliamentarian	Louis Straub	Fairbanks Scale, Inc.
Private Sector Member	Chuck Corr	Chuck Corr Consulting
Private Sector Member	Scott Fenwick	National Biodiesel Board

Cannabis Task Group		
Office	Name	Affiliation
Co-Chair	James Cassidy	Massachusetts
Co-Chair	Charles Rutherford	CPR Squared, Inc.
Public Sector Member	Brad Bachelder	Maine
Public Sector Member	Loren Kipp Blauer	Nevada
Public Sector Member	Stacy Carlsen	Marin County, California
Public Sector Member	Tim Chesser	Arkansas
Public Sector Member	Mark Ciociolo	City of Worcester, Massachusetts
Public Sector Member	Dr. Matthew Curran	Florida
Public Sector Member	Jason Flint	New Jersey
Public Sector Member	Kurt Floren	Los Angeles County, California
Public Sector Member	Paul Floyd	Louisiana
Public Sector Member	Mike Gower	Nevada
Public Sector Member	Elaine Grillo	City of Boston, Massachusetts
Public Sector Member	Ivan Hankins	Iowa
Public Sector Member	Mike Harrington	Iowa
Public Sector Member	Steven Harrington	Oregon
Public Sector Member	Ryanne Hartman	Michigan
Public Sector Member	Kristin Macey	California
Public Sector Member	Mauricio Mejia	Florida
Public Sector Member	Randall Morrison	Erie County, New York
Public Sector Member	Doug Musick	Kansas
Public Sector Member	Angel Nazario	City of Boston, Massachusetts
Public Sector Member	Josh Nelson	Oregon

Public Sector Member	Laurence Nolan	Los Angeles County, California (Retired)
Public Sector Member	Ken Ramsburg	Maryland
Public Sector Member	William Rigby	Utah
Public Sector Member	Garrett Russell	Illinois
Public Sector Member	Louis Sakin	Towns of Holliston, Hopkinton, Northbridge, MA
Public Sector Member	Kate Smetana	Colorado
Public Sector Member	Dedrick Stephens	City of Cleveland, Ohio
Public Sector Member	Ron Valinski	City of Worcester, Massachusetts
Public Sector Member	Lisa Warfield	NIST Office of Weights and Measures
Public Sector Member	James Willis	New York
Public Sector Member	Michelle Wilson	Arizona
Public Sector Member	John Young	Yolo County, California
Private Sector Member	Michael Bronstein	ATACH
Private Sector Member	David Calix	NCR
Private Sector Member	Brian Duncan	ECRS
Private Sector Member	Eric Golden	Cardinal Scale Manufacturing, Co.
Private Sector Member	Chris Guay	Associate
Private Sector Member	Joanna Johnson	Johnson Policy Associates, Inc.
Private Sector Member	Ben Raham	WIPOTEC-OCS, Inc.

Credit Card Skimmer Task Group		
Office	Name	Affiliation
Chair	Hal Prince	Florida
Public Sector Member	James Cassidy	Massachusetts
Public Sector Member	Mike Harrington	Iowa
Public Sector Member	John McGuire	New Jersey
Public Sector Member	Mike Sikula	New York
Public Sector Member	Craig VanBuren	Michigan
Public Sector Member	Scott Wagner	Colorado
Public Sector Member	Michelle Wilson	Arizona
Private Sector Member	Paige Anderson	NACS
Private Sector Member	Owen DeWitt	FlintLoc Technologies, LLC
Private Sector Member	Randy Moses	Wayne Fueling Systems
Private Sector Member	Brent Price	Gilbarco, Inc.

Field Standards Task Group		
Office	Name	Affiliation
Chair	Jason Glass	Kentucky
NIST Technical Advisor	G. Diane Lee	NIST, Office of Weights and Measures
Public Sector Member	Brad Bachelder	Maine
Public Sector Member	Josh Nelson	Oregon
Public Sector Member	Kyle Pierson	New Jersey
Public Sector Member	Greg Vander Platts	Minnesota
Private Sector Member	Michael Keilty	Endress + Hauser Flowtec AG, USA
Private Sector Member	Eric Golden	Cardinal Scale Manufacturing, Co.
Private Sector Member	Henry Oppermann	Weights and Measures Consulting, LLC

Milk Meter Tolerance Task Group		
Office	Name	Affiliation
Chair	Charlie Stutesman	Kansas
NTEP Technical Advisor	Mike Manheim	NCWM
NIST Technical Advisor	G. Diane Lee	NIST, Office of Weights and Measures
Canadian Technical Advisor	Luciano Burtini	Measurement Canada
Public Sector Member	Jeff Cambeis	California
Public Sector Member	Mitchell Marsalis	Louisiana
Public Sector Member	Jim Willis	New York
Private Sector Member	Bob Fradette	Agri-Mark
Private Sector Member	Leigh Hamilton	Piper Systems
Private Sector Member	Carey McMahon	Poul Tarp A/S
Private Sector Member	Brandon Meiwes	Dairy Farmers of America

Promotional Toolkit Task Group		
Office	Name	Affiliation
Chair	Stephen Benjamin	North Carolina
Public Sector Member	Jerry Buendel	Retired
Public Sector Member	Kurt Floren	Los Angeles County, California
Private Sector Member	Bill Callaway	Crompco

Skimmer Education Task Group		
Office	Name	Affiliation
Co-Chair	Paige Anderson	NACS
Co-Chair	John McGuire	New Jersey

Public Sector Member	Bobby Fletcher	Louisiana
Public Sector Member	John Larkin	California
Public Sector Member	Mike Harrington	Iowa
Public Sector Member	Vince Wolpert	Arizona
Private Sector Member	Scott Boorse	PEI
Private Sector Member	Owen DeWitt	FlintLoc Technologies, LLC
Private Sector Member	Brent Price	Gilbarco, Inc.
Private Sector Member	Mike Roach	Invenco Payment Systems
Private Sector Member	Scott Schober	Berkley Varitronics Systems

Verification Scale Division (e) Task Group		
Office	Name	Affiliation
Chair	Doug Musick	Kansas
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	John Barton	NIST, Office of Weights and Measures
Canadian Technical Advisor	Luciano Burtini	Measurement Canada
Public Sector Member	Anthony Bong Lee	Orange County, California
Public Sector Member	Steve Timar	New York
Public Sector Member	Howard Tucker	Florida
Private Sector Member	Eric Golden	Cardinal Scale Manufacturing, Co.
Private Sector Member	Jan Konijnenburg	Rice Lake Weighing Systems, Inc.
Private Sector Member	Richard Suiter	Richard Suiter Consulting
At-Large Member	Ross Andersen	Retired
At-Large Member	Steve Cook	Retired

Weigh-in-Motion Task Group		
Office	Name	Affiliation
Co-Chair	Tim Chesser	Arkansas
Co-Chair	Alan Walker	Florida
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	Rick Harshman	NIST, Office of Weights and Measures
Public Sector Member	John Barton	NIST, Office of Weights and Measures
Public Sector Member	Jason Flint	New Jersey
Public Sector Member	Greg Gholston	Mississippi
Public Sector Member	Lenny Goebel	Illinois
Public Sector Member	John McGuire	New Jersey
Public Sector Member	Jason Smith	South Dakota
Private Sector Member	Jon Arnold	Intercomp Company

Private Sector Member	James Faas	YRC Freight
Private Sector Member	Brad Fryburger	Southern IL Scale
Private Sector Member	Eric Golden	Cardinal Scale Manufacturing, Co.
Private Sector Member	Joe Grell	Rice Lake Weighing Systems, Inc.
Private Sector Member	Louis Straub	Fairbanks Scale, Inc.
Private Sector Member	Richard Suiter	Richard Suiter Consulting
Private Sector Member	Brian Taylor	Intelligent Imaging Systems
Private Sector Member	Sam Wimsett	Cardinal Scale Manufacturing, Co.
Private Sector Member	Matt Young	Intercomp Company

NTEP Belt-Conveyor Scale Sector		
Office	Name	Affiliation
Chair	Peter Sirrico	Thayer Scale / Hyer Industries
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	John Barton	NIST, Office of Weights and Measures
Public Sector Member	Tina Butcher	NIST, Office of Weights and Measures
Public Sector Member	Zacharias Tripoulas	Maryland
Private Sector Member	Eric Golden	Cardinal Scale Manufacturing, Co.
Private Sector Member	Jan Konijnenburg	Rice Lake Weighing Systems, Inc.

NTEP Grain Analyzer Sector		
Office	Name	Affiliation
Chair	Karl Cunningham	Illinois
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	G. Diane Lee	NIST, Office of Weights and Measures
Advisory Member	Cassie Eigenmann	Retired
Public Sector Member	Tina Butcher	NIST, Office of Weights and Measures
Public Sector Member	Ivan Hankins	Iowa
Public Sector Member	Jason Jordan	USDA, FGIS, Technical Services Division
Public Sector Member	April Lee	North Carolina
Public Sector Member	Loren Minnich	Kansas
Private Sector Member	Jeffrey Adkisson	Grain and Feed Association of Illinois
Private Sector Member	Rachel Beiswenger	TSI Incorporated
Private Sector Member	Martin Clements	The Steinlite Corporation
Private Sector Member	Casey Frakes	The Steinlite Corporation
Private Sector Member	Andrew Gell	Foss North America

Private Sector Member	Charles Hurburgh, Jr.	Iowa State University
Private Sector Member	Jess McCluer	National Grain and Feed Association
Private Sector Member	Thomas Runyon	Seedburo Equipment Co.

NTEP Measuring Sector		
Office	Name	Affiliation
Chair	Michael Keilty	Endress + Hauser Flowtec AG, USA
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	Tina Butcher	NIST, Office of Weights and Measures
Public Sector Member	TBD	Measurement Canada
Public Sector Member	Hunter Hairr	North Carolina
Public Sector Member	Allen Katalinic	NCWM
Public Sector Member	Louis Martinet	Measurement Canada
Public Sector Member	Chad Parker	North Carolina
Public Sector Member	Randy Ramsey	North Carolina
Public Sector Member	John Roach	California
Private Sector Member	Steve Bar	Bennett Pump Company
Private Sector Member	Marc Buttler	Emerson / Micro Motion
Private Sector Member	Craig Cavanaugh	Tuthill Transfer Systems
Private Sector Member	Rodney Cooper	Brodie International
Private Sector Member	Constantine Cotsoradis	Flint Hills Resources
Private Sector Member	Ronnell Gallon	Zenner Performance Meters, Inc.
Private Sector Member	John Hathaway	Murray Equipment
Private Sector Member	Dmitri Karimov	Liquid Controls, LLC
Private Sector Member	Douglas Long	RDM Industrial Electronics
Private Sector Member	Richard Miller	FMC Technologies Measurement Solutions, Inc.
Private Sector Member	Randy Moses	Wayne Fueling Systems
Private Sector Member	Andre Noel	Neptune Technology Group, Inc.
Private Sector Member	Robin Parsons	Parafour Innovations, LLC
Private Sector Member	Brent Price	Gilbarco, Inc.

NTEP Software Sector		
Office	Name	Affiliation
Chair	James Pettinato	Technip FMC
NTEP Technical Advisor	Darrell Flocken	NCWM
Technical Advisor	Vere Miller	Mettler-Toledo, LLC
Secretary	Teri Gulke	Liquid Controls, LLC
Public Sector Member	Tom Buck	Ohio

Public Sector Member	Luciano Burtini	Measurement Canada
Public Sector Member	Katya Delak	NIST, Office of Weights and Measures
Public Sector Member	Jeff Gibson	Ohio
Public Sector Member	Steve Harrington	Oregon
Public Sector Member	Eric Morabito	New York
Public Sector Member	Cinthia Reyes	California
Public Sector Member	John Roach	California
Public Sector Member	Zacharias Tripoulas	Maryland
Private Sector Member	Mary Abens	Emerson Process Management
Private Sector Member	John Atwood	Tyson Foods
Private Sector Member	Kevin Detert	Avery Weigh-Tronix
Private Sector Member	Brian Duncan	ECRS
Private Sector Member	Andrew Gell	Foss North America
Private Sector Member	Keith Harper	Gencor Industries, Inc.
Private Sector Member	Jan Konijnenburg	Rice Lake Weighing Systems, Inc.
Private Sector Member	Dominic Meyer	KSi Conveyors, Inc.
Private Sector Member	Richard Miller	FMC Technologies Measurement Solutions, Inc.
Private Sector Member	Mike Roach	VeriFone
Private Sector Member	David Vande Berg	Vande Berg Scales
Private Sector Member	Xin Wang	Amazon
Private Sector Member	John Wind	Ossid LLC
Private Sector Member	Kraig Wooddell	Hobart

NTEP Weighing Sector		
Office	Name	Affiliation
Chair	Rob Upright	VPG Transducers
NTEP Technical Advisor	Mike Manheim	NCWM
NIST Technical Advisor	John Barton	NIST, Office of Weights and Measures
Advisory Member	Robert Feezor	Retired
Public Sector Member	Tom Buck	Ohio
Public Sector Member	Tina Butcher	NIST, Office of Weights and Measures
Public Sector Member	Kevin Chesnutwood	NIST
Public Sector Member	Nathan Gardner	Oregon
Public Sector Member	Steve Harrington	Oregon
Public Sector Member	Marcus Harwitz	USDA, GIPSA, FGIS
Public Sector Member	Robert Meadows	Kansas
Public Sector Member	Loren Minnich	Kansas
Public Sector Member	Eric Morabito	New York

Public Sector Member	Zacharias Tripoulas	Maryland
Public Sector Member	Pascal Turgeon	Measurement Canada
Public Sector Member	Juana Williams	NIST, Office of Weights and Measures
Private Sector Member	Sprague Ackley	Digimarc
Private Sector Member	Steven Beitzel	Systems Associates, Inc.
Private Sector Member	Neil Copley	Thurman Scale Co.
Private Sector Member	Bill Danderand	FedEx
Private Sector Member	Scott Davidson	Mettler-Toledo, LLC
Private Sector Member	Brian Duncan	ECRS
Private Sector Member	Mitchell Eyles	Flintec, Inc.
Private Sector Member	Andrew Goddard	Marel, Ltd.
Private Sector Member	Eric Golden	Cardinal Scale Manufacturing, Co.
Private Sector Member	Brandi Harder	Rice Lake Weighing Systems, Inc.
Private Sector Member	Jon Heinlein	Transcell Technology, Inc.
Private Sector Member	Scott Henry	Zebra Technologies
Private Sector Member	Sam Jalahej	Totalcomp, Inc.
Private Sector Member	Jan Konijnenburg	Rice Lake Weighing Systems, Inc.
Private Sector Member	Edward Luthy	Schenck Process Transport N.A.
Private Sector Member	William Miller	Mettler-Toledo, LLC
Private Sector Member	Thomas Rice	Mettler-Toledo, LLC
Private Sector Member	Kyle Schaffer	Tufner Weighing Systems
Private Sector Member	Louis Straub	Fairbanks Scale, Inc.
Private Sector Member	Russ Vires	Mettler-Toledo, LLC
Private Sector Member	Jerry Wang	A&D Engineering, Inc.
Private Sector Member	John Wind	Ossid LLC

NTEP EVSE Work Group		
Office	Name	Affiliation
Chair	Andrei Moldoveanu	NEMA
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	Juana Williams	NIST, Office of Weights and Measures
Public Sector Member	Tom Buck	Ohio
Public Sector Member	John Roach	California
Private Sector Member	Keith Bradley	Squire Patton Boggs
Private Sector Member	Dave Parmelee	Control Module, Inc.
Private Sector Member	Wolfram Teppan	LEM Intellectual Property SA

NTEP MDMD Work Group		
Office	Name	Affiliation
Chair	Chris Senneff	Rice Lake Weighing Systems, Inc.
NTEP Technical Advisor	Darrell Flocken	NCWM
NIST Technical Advisor	TBD	NIST, Office of Weights and Measures
Public Sector Member	Tom Buck	Ohio
Public Sector Member	Jeff Fantozzi	Ohio
Public Sector Member	Jeff Gibson	Ohio
Public Sector Member	Mike Kelley	Ohio
Public Sector Member	Paige Vinten	Measurement Canada
Private Sector Member	Sprague Ackley	Digimarc
Private Sector Member	Jeff Cooper	National Motor Freight Traffic Association
Private Sector Member	Bill Danderand	FedEx
Private Sector Member	Scott Davidson	Mettler-Toledo, LLC
Private Sector Member	Michael Eichenberg	FreightSnap, LLC
Private Sector Member	James Faas	YRC Freight
Private Sector Member	Brandi Harder	Rice Lake Weighing Systems, Inc.
Private Sector Member	Scott Henry	Zebra Technologies
Private Sector Member	Robert Kennington	Cubiscan
Private Sector Member	Jan Konijnenburg	Rice Lake Weighing Systems, Inc.
Private Sector Member	Don Newell	Newell Enterprises, LLC
Private Sector Member	Sameer Parmar	SICK, Inc.
Private Sector Member	Drew Parrett	Cognex
Private Sector Member	Tony Romeo	Datalogic
Private Sector Member	Mike Stutler	United Parcel Service
Private Sector Member	Richard Suiter	Richard Suiter Consulting
Private Sector Member	Russ Vires	Mettler-Toledo, LLC
Private Sector Member	Xin Wang	Amazon
Private Sector Member	Scott Wigginton	United Parcel Service

Central Weights and Measures Association (CWMA) (www.cwma.net)		
States	Illinois Indiana Iowa	Kansas Michigan Minnesota Missouri Nebraska North Dakota Ohio South Dakota Wisconsin
Contact	Ms. Sherry Turvey Kansas Department of Agriculture	(785) 564-6682 sherry.turvey@ks.gov
Interim Meeting	October 18-21, 2021	Wisconsin Dells, Wisconsin
Annual Meeting	May 23-26, 2022	Bismarck, North Dakota

Northeastern Weights and Measures Association (NEWMA) (www.newma.us)		
States	Connecticut Maine Massachusetts	New Hampshire New Jersey New York Pennsylvania Puerto Rico Rhode Island Vermont
Contact	Mr. James Cassidy Commonwealth of Massachusetts	(617) 727-3480 james.cassidy@mass.gov
Annual Meeting	October 5-7, 2021	Virtual
Interim Meeting	May 2022	Saratoga Springs, New York (tentative)

Southern Weights and Measures Association (SWMA) (www.swma.org)		
States	Alabama Arkansas Delaware	District of Columbia Florida Georgia Kentucky Louisiana Maryland Mississippi North Carolina Carolina Oklahoma South Carolina Tennessee Texas U.S. Virgin Islands Virginia West Virginia
Contact	Dr. Bobby Fletcher Louisiana Department of Agriculture	(225) 925-3780 bfletcher@ldaf.state.la.us
Annual Meeting	October 10-13, 2021	New Orleans, Louisiana

Western Weights and Measures Association (WWMA) (www.westernwma.org)		
States	Alaska Arizona California	Colorado Hawaii Idaho Montana Nevada New Mexico Oregon Utah Washington Wyoming
Contact	Mr. Mahesh Albuquerque Colorado Division of Oil and Public Safety	(303) 318-8502 mahesh.albuquerque@state.co.us
Annual Meeting	September 26-30, 2021	Golden, Colorado

General Session Proceeding Speeches, Presentations, and Awards

105th Annual Meeting

St. Pete Beach, Florida

January 10 – 12, 2021

106th Annual Meeting

Rochester, New York

July 18 - 23, 2021

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105th NCWM Annual Meeting

St. Pete Beach, Florida

January 10 – 12, 2021

2020 Honorary President's Address

Dr. Walter G. Copan

**Under Secretary of Commerce for Standards and Technology and
Director, National Institute of Standards and Technology (NIST)**

There was no address at the 105th NCWM Annual Meeting by the Honorary President.

National Conference on Weights and Measures 2020 Chairman's Address

Mr. Craig VanBuren

Michigan

Department of Agriculture and Rural Development

It has been an honor to serve as the chair of NCWM over the last year. It obviously has not been the chairmanship I expected but, none the less, has been a great experience. In many ways, I think we all may have learned more because of having to conduct business during a pandemic. Primarily, it was important not just to communicate, but learn to communicate effectively. That may be the biggest takeaway from my term, not just for me, but for the entire Board of Directors and Conference members.



Like many of you, I have been a member of NCWM for a long time, almost half of my life. It is a part of who I am. There is an ebb and flow to operations and the conducting of business. There are challenges that try who we are and there are triumphs. While we should not forget those challenges, as they are a big part of what shapes us, we also should not lose sight of the triumphs and our ability to overcome, grow and strengthen; as a conference, as leaders in our field, as counterparts and coworkers, and as friends. I look forward to being a part of the future of the National Conference on Weights and Measures.

I would like to thank Brett Gurney and Hal Prince for the leadership and assistance, as well as the entire Board of Directors. Thank you to the entire NCWM staff (Don, Elisa, Tyler, Darrell, and Mike) for their guidance and assistance during my service and their daily handling of operations. And finally, thank you to my staff for their support and their quality of work. It is because of them I am in the position I am and have been afforded this opportunity.

Thank you and stay safe and healthy.

A handwritten signature in dark ink, appearing to read 'Craig VanBuren', with a stylized flourish at the end.

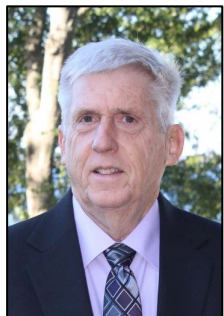
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National Conference on Weights and Measures 2020 Chairman-Elect's Address

Rochester, New York
July 20, 2021

Mr. Hal Prince
Florida

“Measuring Up to the New Normal”



Dear NCWM Members,

Welcome to the virtual combined 2020 NCWM Annual Meeting, and the 2021 NCWM Interim Meeting.

That's right, a virtual combined Annual and Interim Meeting! I know this is unusual. However, with a global pandemic still rampant, the NCWM Board of Directors made the difficult decision to reschedule the NCWM Annual Meeting until January and have the two meetings hosted virtually.

Because of the unusual circumstances this year, a short explanation is in order. The 105th NCWM Annual Meeting will reconvene on Monday, January 11th, and will only address the voting items on the committee agendas followed by our annual business meeting. Open Hearings on the voting items and voting will be carried out as normal on Tuesday, January 12th. On Wednesday, January 13th, the NCWM Interim Meeting will convene as usual. Any carryover or new items will be considered at that time.

Don Onwiler and the NCWM staff have done a terrific job to make the combining of these meetings as seamless and with as little confusion as possible. Information and committee agendas with the voting items for the Annual Meeting are contained in a condensed *Publication 16* and information for the regular Interim Meeting is contained in a separate *Publication 15*.

I would like to express my sincere thanks to the committees, technical advisors, and stakeholders who have continued to meet and prepare throughout the extended period for these two meetings. Their commitment and dedication to the work are commendable!

Thank you all for your continued support and participation.

Sincerely,

A handwritten signature in black ink that reads "Hal Prince". The signature is written in a cursive, flowing style.

Hal Prince

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2020 Roll Call of the States

The Roll Call of the States is taken at the commencement of the Voting Session of the Annual Meeting.

Alabama	Kentucky (X)	Northern Mariana Islands
Alaska (X)	Louisiana (X)	Ohio (X)
American Samoa	Maine (X)	Oklahoma
Arizona (X)	Maryland (X)	Oregon (X)
Arkansas (X)	Massachusetts (X)	Pennsylvania (X)
California (X)	Michigan (X)	Puerto Rico
Colorado (X)	Minnesota (X)	Rhode Island
Connecticut (X)	Mississippi (X)	South Carolina
Delaware (X)	Missouri (X)	South Dakota (X)
District of Columbia (X)	Montana (X)	Tennessee (X)
Florida (X)	Navajo Nation	Texas (X)
Georgia (X)	Nebraska (X)	Utah (X)
Guam	Nevada (X)	Vermont (X)
Hawaii	New Hampshire (X)	Virgin Islands
Idaho	New Jersey (X)	Virginia (X)
Illinois (X)	New Mexico (X)	Washington (X)
Indiana	New York (X)	West Virginia (X)
Iowa (X)	North Carolina (X)	Wisconsin (X)
Kansas (X)	North Dakota (X)	Wyoming
Present (X):	43	
Absent:	14	

105th NCWM Annual Meeting/Award Recipients

2020 Anniversary Awards, Special Recognition Awards and Contributions Award

This did not occur at the 105th NCWM Annual Meeting.

106th NCWM Annual Meeting

Rochester, New York
July 18 – 23, 2021

2021 Honorary President's Address

Dr. Eric K. Lin

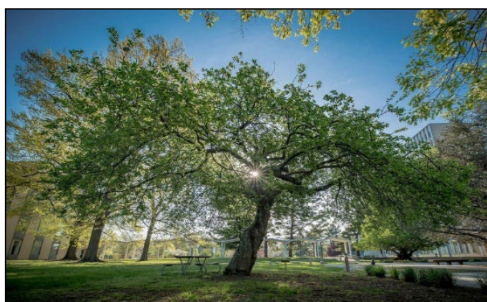
**Acting Associate Director for Laboratory Programs for Standards and Technology and
Director, National Institute of Standards and Technology (NIST)**

Good afternoon. I'm glad to be here today. I'd like to thank Hal Prince, Chairman of NCWM; Richard A. Ball, Commissioner of the New York Department of Agriculture and Markets; Scott Simmons, Presiding Officer of the General Session; and Don Onwiler and his staff at NCWM for putting this conference together. It is an honor for me to be able to address you today for the 2021 NCWM Annual Meeting. I regret not being able to meet you in person, but I'm pleased to at least join you virtually for this conference, which has such a rich history.

I would like to affirm from the outset that NIST is committed to being a partner with NCWM in assuring uniformity and equity in the marketplace, and we will support you in whatever way we can in pursuit of these goals. We've all had to make many adjustments since February 2020, and looking ahead, this trend of "pivoting" does not appear to be slowing down; but many upcoming changes could be for the better as we create more flexible work environments and start to meet in person again.

You may have heard last week about a change coming to NIST. President Biden has nominated Laurie Locascio, who spent many productive years with us, to be our next director. We will, of course, let you know when the confirmation process is complete.

One unfortunate change I feel compelled to share while many of you are in New York, one of the largest apple-producing states, is the fate of the venerated official Newton apple tree on our Gaithersburg, Maryland, campus. Sadly, the tree died recently. It had been growing on the NIST campus since 1967 and was a clone of an apple tree that grows near Isaac Newton's home in England. While legend had Newton getting hit on the head with an apple, he told the story of realizing gravity must exist while watching apples drop from the trees in his orchard. And although our tree has finally succumbed to gravity itself, we do have some clones in waiting and our new official Newton apple will be planted nearby soon.



We could say the tree is like this past year. We've been tested, there have been losses, but we've proven to be resilient, and we're going to recover.

This is an opportunity to rebuild, renew, and reaffirm our commitment to our common mission. Our partnership has been long and productive, and we have a lot of pride in what we've been able to accomplish, especially in such unprecedented times.

There's a plaque that stood next to our Newton tree that says, "Science has its traditions as well as its frontiers." Weights and measures are among the most traditional of sciences. Accuracy in weights and measures is one of the pillars of commerce and civilization itself. And it operates at the frontiers of commerce. You maintain an age-old

system that is constantly being challenged with new commodities and new technologies, and you are to be applauded for your efforts.

At NIST, we are also looking forward to meeting tomorrow's challenges as well. Today it is my pleasure to introduce to you the next Chief of the Office of Weights and Measures, Dr. Katrice Lippa.

Katrice is a career NIST staffer, having joined us in 2002 as a research chemist. She has held positions of increasing leadership responsibility, and most recently served as the leader of the Organic Chemical metrology Group. Among its many responsibilities, that group develops and promotes Standard Reference Materials and Data products for clinical diagnostics, food nutritional labeling, food safety, natural products, chemical manufacturing, and forensics. In short, her work has impacted many areas of importance to consumer safety and business competitiveness. She has also held leadership positions in several high-impact national and international standards development activities related to chemistry metrology and has a clear understanding of the importance of common standards in ensuring accuracy and equity.

I want to thank Dr. Douglas Olson for his years of service as the chief of OWM and his role with NCWM, and his long career with NIST. I know he also regrets not being able to say his goodbyes to NCWM friends and colleagues in person. Like everywhere else, this past year plus at NIST has been unusual, with many of our day-to-day laboratory operations slowing to a crawl. Even now, our campuses are working at diminished capacity and a great portion of our workforce remains on maximum telework. Yet our staff have found many ways to do our part to fight the pandemic.

NIST has also been working to make artificial intelligence more trustworthy. That is, we are helping to identify ways to crack open an artificial intelligence's thought processes to understand why it makes the decisions it does. This can be important in all sorts of areas and is important for making sure AI provides the best outcomes for everyone, whether that's choosing your next favorite song or approving you for a mortgage. We awarded \$50 million in emergency funding to support manufacturers affected by the outbreak.

NIST researchers showed that masks are effective at knocking down exhaled breath, lowering the chance of disease transmission. We developed protocols for disinfecting masks to cope with the initial shortages and demonstrated inexpensive ways for new manufacturers of hand sanitizer to ensure they were making effective formulas. Just recently, NIST awarded \$153 million to support the National Institute for Innovation in Manufacturing Biopharmaceuticals. These investments will help us better prepare for the next pandemic as well as provide lifesaving cures and treatment for a host of diseases.

In addition to applying our expertise to respond to the pandemic, we have continued to meet other national needs. No doubt many of you are aware of the partial collapse of the Champlain Towers South condominium building in Surfside, Florida. As we did in the aftermath of the 9/11 terrorist attacks, NIST will conduct a full investigation to determine the likely cause of the collapse. We will use that knowledge to inform how codes, standards and best practices might be improved to prevent tragedies like this from happening again. Our team is on site now collecting evidence in what will likely be a years-long investigation.

This is a little flavor of what has been going on at NIST. I want to now speak about constancy and changes with respect to NIST and NCWM. Fundamentally, NIST is mandated by the U.S. Constitution to "fix the standards of weights and measures," and by its founding legislation to "cooperate with the states in securing uniformity in weights and measures laws and methods of inspection."



NCWM is a vital mechanism that supports NIST's work with the states in achieving this second goal. The Constitutional requirement is core to our mission, which affects the commercial measurement system in addition to scientific and industrial metrology, and our entire standards development mission.

The pandemic has required us, however, to rethink how we achieve those goals; the NIST workplace changed dramatically and some of those changes will be permanent.

Technology has helped the workplace adapt (we see it today as I speak remotely), but technology is also going to affect what we measure and exchange in the marketplace and what we need to inspect, and how we approach standards development.

We have also had many changes within our workforce, with a focus on succession planning to ensure continuity. I appreciate Doug's efforts in this area.

Katrice is just the most recent addition to OWM: she is joined by Dr. Michael Hicks and Elizabeth Koncki in the Laboratory Metrology Program; Dr. Katya Delak in the International Legal Metrology Program; Shelby Bowers as the Publication Coordinator; and we hope to have a new hire in the Legal Metrology Devices program later this year.

Many of our recent retirees are working with us as reemployed annuitants, which has been a tremendous help in knowledge transfer and program continuity.

NIST recognizes the critical role of training in ensuring competency, uniformity, and equity in the marketplace. You have heard some of the statistics on OWM classes and students during the open hearings; in simple terms we quadrupled the number of students trained from 2019 to 2020 and doubled the number of classes we offered. The pandemic provided a unique opportunity for OWM to pivot to online training and develop entirely new classes in the areas of Laboratory Metrology, Metric Education, and Laws and Regulations. While we recognize the importance of hands-on training, this success suggests there will be a permanent place for online training in the future. To that end, NIST is investing in a high quality, on-site studio to increase OWM's capacity and quality of broadcasting webinars and creating training videos. New marketplace trends and new consumer technologies will be important for the nation's Weight and Measures system. NIST stands ready to work on these emerging areas and lend its expertise in standards development and technical capability.

Certainly, the transportation sector is poised for a dramatic shift in fuel sources. Vital to that shift is the work NCWM and NIST have already done or will do in areas such as traceability in electric vehicle charging and evaluation of field reference meters for fluid fuel delivery.

There is also a recognition among the leading national metrology institutes that the SI must go digital, allowing rapid and seamless transfer of digital measurement information. This could aid calibrations, inspections, and maintenance, again helping promote equity in the marketplace.

In conclusion, I want to thank you for your service this past year. I know it hasn't been easy, and we've had to do a lot of adapting.

My heart goes out to those of you who might have been personally affected by the pandemic. I know we still have some distance to go before we're completely out of the woods, but it seems things have turned around.

I think this next year will see us getting back to normal, a new kind of normal, but normal, nonetheless. I'm excited to see so many new faces joining the OWM team at NIST, I want to thank Doug for his work, and I know Katrice will do a great job as division chief.

Thank you.

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2021 Honorary President's Address Presentation

NIST and NCWM
Partners in Weights and Measures
Assuring Uniformity and Equity in the Marketplace


Eric K. Lin
Acting Associate Director for Laboratory Programs

NIST National Institute of
Standards and Technology
U.S. Department of Commerce

NCWM, Rochester, NY
July 20, 2021

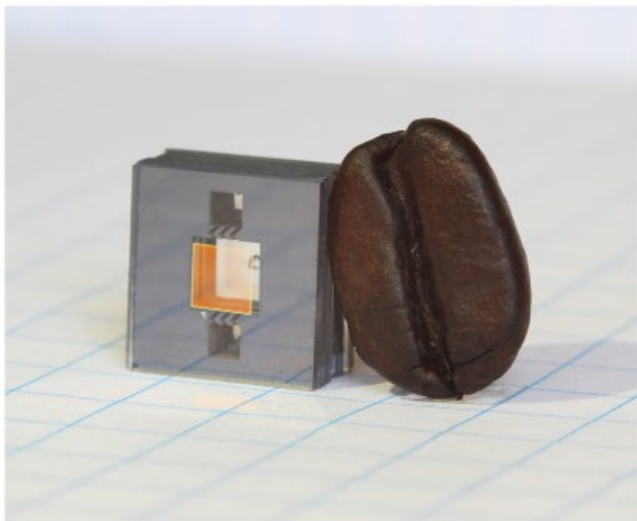
Newton Tree

NIST





Emerging Technologies



Quantum Technology

Engineering Biology

Artificial Intelligence

COVID-19 Response

The "Emerging Technologies" section features a dark blue header with the NIST logo. Below the header, on the left, is a photograph of a small, square microchip with gold contacts, placed next to a single, dark brown coffee bean on a sheet of blue-lined graph paper. To the right of the image is a vertical list of four technology areas, each in a light grey rectangular box: Quantum Technology, Engineering Biology, Artificial Intelligence, and COVID-19 Response.

Recent Highlights

NIST



Surfside partial condo collapse



NIIMBL: Biomanufacturing institute

Established in the U.S. Constitution

Federal role to “fix the
standard of weights and
measures”

NIST



A Shared Vision for Legal Metrology Standards, and Weights and Measures

NIST

- NIST must still
 - “fix the standard of weights and measures” (US Constitution) and
 - “cooperate with the states in securing uniformity in weights and measures laws and methods of inspection” (NIST Organic Act)
- Pandemic has required rethinking of how organizations can achieve their mission
 - Workplace has changed
 - Workforce has changed
 - Technology has changed
- Renewed commitment by federal government in role of standards in promoting trade and economic security



OWM Changes

NIST

- Dr. Katrice Lippa Chief of OWM on July 18, 2021
- 6 new OWM staff since 2018 (of 19 total)
 - Dr. Micheal Hicks leads the Laboratory Metrology Program since 2020
 - Elizabeth Koncki joins Laboratory Metrology Program August 2021
 - Dr. Katya Delak joined the International Legal Metrology Program in 2018
 - Shelby Bowers, Publication Coordinator since April 2021
 - Open vacancy in Legal Metrology Devices Program, expect filling by September 2021
- Use of recent retirees as reemployed annuitants

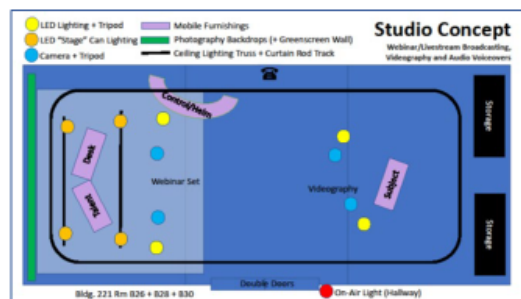


Dr. Katrice Lippa, Chief of OWM

OWM Training: New Courses, New Technology

NIST

- Switch from in-person to on-line training in response to pandemic
 - 2020: 2774 students trained, 69 courses
 - 2019: 667 students trained, 35 courses
- New on-line courses in Laboratory Metrology, Metric Education, Laws and Regulations
- Investing in:
 - On-site studio for broadcasting webinars and creating videos
 - Staff development in training methods



Post-pandemic reality

NIST

- NIST will resume travel, however virtual meetings are a new reality
- OWM will resume in-person training, and will continue virtual training
- NIST will look for critical uses of metrology in the marketplace, to further common NIST and NCWM goals. Examples are:



Evaluating field reference meters for traceability of transportation fuels



Traceability in Electric Vehicle Charging

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National Conference on Weights and Measures 2021 Chairman's Address

Mr. Hal Prince

Florida

Department of Agriculture and Consumer Services

“Measuring Up to the New Normal”

Welcome everyone! It's great to see you all again, both in person and virtually. Well.... It's been quite a year, hasn't it?

Does anyone remember our Interim Meeting in Riverside California? It seems like a lifetime ago. I for one can say that I have learned a lot since then. Back in 2019, I had only heard of “teams” in the context of sports teams or groups of people who worked together to achieve something. And “zoom” ... zoom was something that you heard, not something that you did! How naïve was I? My life now revolves around seemingly endless, daily barrage of virtual communication via Microsoft Teams and Zoom.



When I look back at previous NCWM Chairman Addresses, I see that they have talked about the accomplishments over their term. I think possibly our greatest accomplishment is that we have come through a worldwide pandemic relatively unscathed. I am not sure that any of us want to revisit those events, but it is now our history. I am going to drag you all through a bit of it one more time because there are some significant events that need to be mentioned.

There have been numerous “firsts” over the past year, and we should recognize that the NCWM has weathered the 2020 storms and emerged improved and stronger because of them. Who would have ever thought that the things that we have seen over the past twelve months could ever have happened?

My theme for this year was “*Measuring up to the New Normal*”. When I decided on the theme back in April 2020, little did I know what the new normal really looked like for NCWM, the states and the FED alike.

Also, in April 2020, the NCWM Board of Directors was contemplating the pros and cons of holding an in-person Board Meeting in the spring. Under our Immediate Past Chair's guidance, Craig VanBuren of Michigan, we decided to hold a virtual meeting believing that, by July, things should return to normal, and we would be meeting in person again. With the spring regional meetings fast approaching, we decided to try to hold those meetings virtually, something that we had never done. The concept was good, but our confidence level was low at best. Don and the NCWM Staff went about setting up Zoom Meetings and with the Western Region leading the show. The results were incredible with overall great participation outcome!

As July 2020 approached, and after numerous more virtual Board meetings, it became apparent that an in-person July Annual Meeting would be impossible. Additionally, the NCWM Bylaws didn't allow virtual meetings. Again, under Craig's guidance, and with much consternation, the location of the Annual Meeting in Tacoma, Washington was cancelled.

Craig and a few of his staff convened the Annual Meeting in Michigan. Without a voting quorum, the meeting was postponed until January 2021, a time when we were certain we could meet in person again. NCWM Bylaws state the NCWM Chairman-Elect becomes the NCWM Chairman immediately following the July Annual Meeting. It was then, with mixed feelings, Craig became the Immediate Past Chairman, and I became NCWM Chairman. I would like to recognize Craig VanBuren for his service and accomplishments as 2019-2020 NCWM Chairman!

By this time, we had all recognized the cold, hard, fact that the COVID-19 Pandemic was not going away any time soon and that the Conference would be in trouble if we couldn't continue to move the standards setting process forward and have NIST publish the updated handbooks!

Even though we had proven that we could hold productive virtual meetings, our NCWM Bylaws prohibited us from voting virtually.

With that in mind, I appointed individuals to a newly created Bylaw Review Task Group charged with identifying changes that would be needed in our bylaws to allow us to meet, conduct business and vote virtually... (just in case the pandemic lingered).

As time was short, the Task Group set about the task immediately with a goal of developing a recommendation prior to the January Interim Meeting. It wasn't long before the Task Group had a draft proposal for the Board to review. With input from the Board, the proposal was finalized, and a Form 15 was submitted. This paved the way for the changes that we will be voting on later this week.

I would like to recognize the Bylaw Review Task Group members for their tremendous work:

- Craig Van Buren – Chair
- Don Onwiler – NCWM Executive Director
- Dr. Doug Olson – Executive Secretary
- Chuck Corr – Private Sector Member
- Scott Fenwick – Private Sector Member
- Lou Straub – Parliamentarian

By the time of our Fall regional meetings, there was still not an *all clear* for travel or meetings. Once more, the regionals were held virtually, also with great success!

In the late fall, *Robert's Rules of Order* provided an interpretation that organizations may perform virtual voting, but the results must be ratified at the next opportunity to assemble an on-person quorum. This was somewhat helpful but fell short of what was needed.

The previously postponed 105th Annual Meeting was held in January, along with our first ever virtual Interim Meeting. Voting on the items presented at the 105th Annual Meeting was conducted virtually. We had a few hiccups at first, but all-in-all voting was conducted relatively seamlessly.

At the close of the January meetings, we were once again confident that we would easily hold the 106th NCWM Annual Meeting in July in person. As spring emerged, we became concerned that we would be able to achieve a voting quorum in July. The decision was made to petition the District Court of Lancaster County, Nebraska (where NCWM is incorporated), to allow the NCWM to conduct virtual voting during our July Annual Meeting. The court found in our favor which brings us to this meeting. So.... here we are, with 90 in-person attendees, 120 virtual and a representation of 42 states.

I think we all have some tales about our individual experiences of the past year, but I can safely say that the experiences that I have had as NCWM Chairman will never be forgotten by me and I expect, by the rest of the Board.

We didn't get to this point by the efforts of any single person, there was a great team at NCWM working to keep the train on the tracks even through the pandemic when the rest of the world was seemingly closed. Don, Elisa, and Tyler kept the office open and operating while Darrell, Mike and Allen were keeping NTEP operating, traveling, and issuing certificates as the state labs were unable to travel.

There are a few people I would like to recognize before I go any further:

Dr. Katrice Lippha – Incoming Chief of the NIST, Office of Weights and Measures

Bala Panti Abdullahi – **Chief of Legal Metrology** – Nigeria Ministry of Industry, Trade & Investment. He made the trip from Nigeria to be here in person because this work is so important!

Rayleigh (Ray) Jin – South Korea (Director of Signet EV Inc.), **Lee Tae Sup** – South Korea (Deputy Gen. Signet EV Inc.), and **Chang Yoon** – South Korea (Signet EV) are also here for the first time to learn about us and how to navigate the regulatory process.

I would also like to mention that one of my goals for the year was to see the Cannabis Task Group make substantial progress in their work. This is a very large group of people with several groups working in different areas. Subgroups are working on package and labeling, method of sale, scale suitability and safety. I would like to recognize the Task Group Chairs Jimmy Cassidy and Charlie Rutherford for their leadership and everyone working on this project.

The National Conference on Weights and Measures is a volunteer organization and numerous members give their time, talent, and energy greatly to see the organization thrive and move the *Standards Setting Process* in the United States forward with each meeting.

As we begin the formal portion of our the 106th Annual Meeting, please don’t forget the hard work of each of the Standing Committees, Task Groups, Focus Groups, the four Regions, our NIST Technical Advisors as well as the Board of Directors and our international partners at Measurement Canada.

Speaking of Measurement Canada, I have the distinct honor today of introducing to you Nathalie Campeau - Acting President of Measurement Canada. Today we will be signing a new Mutual Recognition Arrangement. This MRA has been a crucial part of the National Type Evaluation Program for both Canada and the United States. The first Mutual Recognition Arrangement was signed on January 14, 2001 – 20 years ago. Since then, the arrangement has resulted in “one-stop shopping” for both Canadian and U.S manufacturers seeking Type Evaluation for their devices.

Please join me in welcoming Ms. Campeau!

This is truly a historic week for the Weights and Measures Community. We may not recognize it as such today, but hopefully future weights and measures officials will look back and see that a worldwide pandemic didn’t stop the NCWM in its tracks but was only a minor interruption and this body of great individuals overcame the obstacles and continued to forge ahead and come out the other side, even better and stronger.

Thank you all for all that you do and for your participation in this great endeavor!

Sincerely,

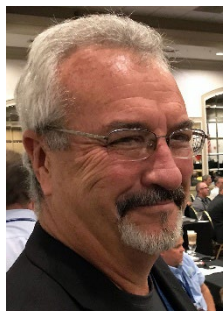


Hal Prince
NCWM Chairman

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National Conference on Weights and Measures 2021 New Chairman's Address

Mr. Ivan Hankins
Iowa



Greetings and welcome to the show that almost wasn't.... But yet, here we are at the finish of another Grand and Glorious National Conference. There is one Chairman whom I know is glad.

I'd like to thank the NCWM for allowing me a spot in this process of equity and standards. My theme "For the Sake of Equity".

I am a Weights & Measures inspector for the State of Iowa. My job is a program planner, but I'm really an inspector, and have been in some capacity for the last 35 years. I work at the pleasure of the taxpayer, administrators, elected officials, I am proud of that.

How many inspectors do we have in the crowd? These are the people I'd like to acknowledge as the foundation of Weights and Measures.

When I was a young Marine, I was attached to a BSSG Service Support Group. I heard an expression "nothing stands without support." We supported the Battalion Landing Team (BLT) with, food, ammo, fuel, and all the other necessities needed to do their mission. So, in this context, that is the Weights and Measures inspector! The 3rd Man (person), the individual whose mission, whose duty is for the Sake of Equity.

Inspectors are people who work in the toxic environment of heat, cold, and human beings. They work for meager pay, with equipment that most of the time is border line antique! Doing the difficult as soon as possible and the impossible... by appointment only!

It's the inspector who NCWM and NIST should be supporting through training and education, so they are able to do their duty. And to that end they must be part of the process, and that starts at the regional level, as mine did so years ago at the Central Weights and Measures Association.

So, with that in mind, there are a couple of things I'd like to initiate and accomplish in the coming year to help the NCWM build for the inspector and for the future of our conference.

One is a survey which could include every state in the nation. The National Conference, through the efforts, and training from NIST will put together a program that focuses on the bottled gas business, specifically LP bottle filling and method of sale (MOS). More to come.

Second, NCWM publications has put together a field/training manual for inspectors.

As new inspectors, we learned how to do things as other inspectors did before us! So, we start right off with bad habits... did you ever hear this one... "don't do it like that, here let me show you the right way!" That works only for getting "numbers" not for equity, uniformity, or a good inspection.

I had a division director once say to me "Ivan why is it you have all of the expensive toys, but never seem to get anything done!" My reply? Well, my reply is the reason why I'm not a Bureau Chief anymore!

How do you argue with that type of ignorance? Well, we have to ... For the Sake of Equity.

There has always been a need for consistency between states. I would like to see the NCWM heading in that direction with the field/training manual. A basic step by step process for inspecting. I remember the first time I saw HB44. It was about this big (showed with fingers). Now, it's this big (dropped the Handbook on the table).

What we have done is taken content from HB 44 and 130, and 112, and placed them in an NCWM publication this big (showed the prototype), making the complex a little easier to maneuver for the inspector. We've already received lots of good input on how to promote, improve, and build this publication. The firsthand book is for Retail Motor Fuel Dispenser Inspections and will be looking at other areas to do the same.

That's it! Two things to help support the Weights & Measures Inspector. NCWM and NIST together, providing and supporting "For the Sake of Equity."

I don't like holding things up especially when there is transportation waiting to get us home.

I want to acknowledge and thank, the staff of the National Conference on Weights and Measures, Don and crew. What a great bunch!! You've really worked to provide us an "all-inclusive meeting" that came off "virtually" without a hitch.

Thanks to Dr. Doug Olson and the staff at NIST/OWM. I personally have had a great working relationship with many folks at NIST over the years. The Institute was able to provide and promote training that couldn't have come at a more necessary time. It goes without saying that we're looking forward to working with your new director Dr. Katrice Lippa.

Thanks to all Committee members, the volunteers, inspectors, associates, and industry, who also work to make this National Conference tick, thank-you.

My wife La Dawn, thirty years married to a Weights and Measures man isn't easy sometimes. Thank you for your love and support. Thank you for being here today.

And for the inspectors out there, this job chooses you, you don't choose the job. Keep striving to better yourself. Take on new challenges and opportunities, make it better for yourself and for the "Sake of Equity".

Well, that's it. Thank you and see you in January!

2021 Roll Call of the States

The Roll Call of the States for the 106th NCWM Annual Meeting was not submitted for inclusion into this Report.

106th NCWM Annual Meeting/Award Recipients

2021 Anniversary Awards

5 Years Attendance

- Ernesto Banta
- Carl Cotton
- Jason Flint
- Mike Harrington
- Mauricio Mejia
- Randy Moses
- Angel Nazario
- Jim Pettinato
- Bob Wiese

10 Years Attendance

- William Callaway
- Steve Harrington
- Doug Rathbun
- Lance Robertson
- Michael Timmons
- Kevin Upschulte

15 Years Attendance

- Tim Chesser

20 Years Attendance

- Fred Clem

30 Years Attendance

- Tina Butcher
- Chris Guay

2021 Special Recognition Awards

Presiding Officers

- Tim Chesser, Arkansas
- Mike Harrington, Iowa
- Scott Simmons, Colorado
- Ethan Bogren, Westchester Co., New York

Chaplain

- Gene Robertson, Mississippi

Parliamentarian

- Louis Straub, Fairbanks Scales

Sergeants-at-Arms

- Matthew Fleming
- Michael Konyak

Nominating Committee

- Mahesh Albuquerque, Colorado
- Stephen Benjamin, North Carolina
- James Cassidy, Massachusetts
- Ivan Hankins, Iowa
- Marc Paquette, Vermont
- Craig VanBuren, Michigan, as Chair

Associate Membership Committee

- Ron Gibson, Seraphin Test Measure, as Vice-Chair
- Bob Wiese, NW Tank & Environmental Services, as Chair

2021 Lifetime Achievement Award

- Louis Straub, Fairbanks Scales

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2020 - 2021 Final Report of the Board of Directors

Mr. Craig VanBuren, 2020 Chairman
Michigan

Mr. Hal Prince, 2021 Chairman
Florida

INTRODUCTION

This is the final report of the Board of Directors (hereinafter referred to as the “Board”) for the 105th and 106th Annual Meetings of the National Conference on Weights and Measures (NCWM).

NCWM convened the 105th Annual Meeting in July 2020, then adjourned to January 10, 2021, due to the lack of a quorum. On January 10-12, 2021, the NCWM reconvened the 105th Annual Meeting and held virtual voting on the 2020 Agenda Items. This was followed by the 2021 Interim Meeting conducted January 13-15, 2021.

Robert’s Rules of Order allow virtual voting, provided that NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the NCWM Bylaws at that time and Roberts Rules of Order, items approved by a virtual vote are effective upon ratification at the next in-person opportunity. The 106th NCWM Annual Meeting was held July 19-22, 2021. NCWM obtained a court order allowing for virtual voting at the 106th Annual Meeting to ratify the decisions of the 105th Annual Meeting, including a bylaw amendment allowing for official virtual voting for the agenda items of the 106th Annual Meeting. The Informational items presented below were adopted as presented when the Board’s report was approved.

This final report contains the proceedings from both the 2020 and 2021 Annual Meetings. The report is based on the 2021 Interim Meeting Agenda offered in NCWM Publication 15; the 2021 NCWM Publication 16, “Committee Reports;” testimony at public hearings; comments received from the regional weights and measures associations and other parties; addendum sheets issued at the 2020 and 2021 Annual Meetings; actions taken by the membership at the voting sessions of the two (105th and 106th) Annual Meetings; and ratifications by the NCWM at the 106th Annual Meeting.

Table A identifies the agenda items by reference key, title of item, page number and the appendices by appendix designations. The acronyms for organizations and technical terms used throughout the agenda are identified in Table B. The first three letters of an item’s reference key are assigned from the Subject Series List. The next 2 digits represent the year the item was introduced. The status of each item contained in the report is designated as one of the following: **(V) Voting Item:** the committee is making recommendations requiring a vote by the active members of NCWM; **(I) Informational Item:** the item is under consideration by the Committee but not proposed for Voting; **(A) Assigned Item:** the Committee has assigned development of the item to a recognized subcommittee or task group within NCWM. **(D) Developing Item:** the Committee determined the item has merit; however, the item was returned to the submitter or other designated party for further development before any action can be taken at the national level; **(W) Withdrawn Item:** the item has been removed from consideration by the Committee.

Subject Series List

Activity Reports.....	ACT Series
Strategic Planning, Policies, and Bylaws.....	SPB Series
Financial	FIN Series
Other Items	OTH Series

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Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
AMC	Associate Membership Committee	NTEP	National Type Evaluation Program
NCWM	National Conference on Weights and Measures	OIML	International Organization of Legal Metrology
NIST	National Institute of Standards and Technology	OWM	Office of Weights and Measures

Details of All Items
(In order by Reference Key)

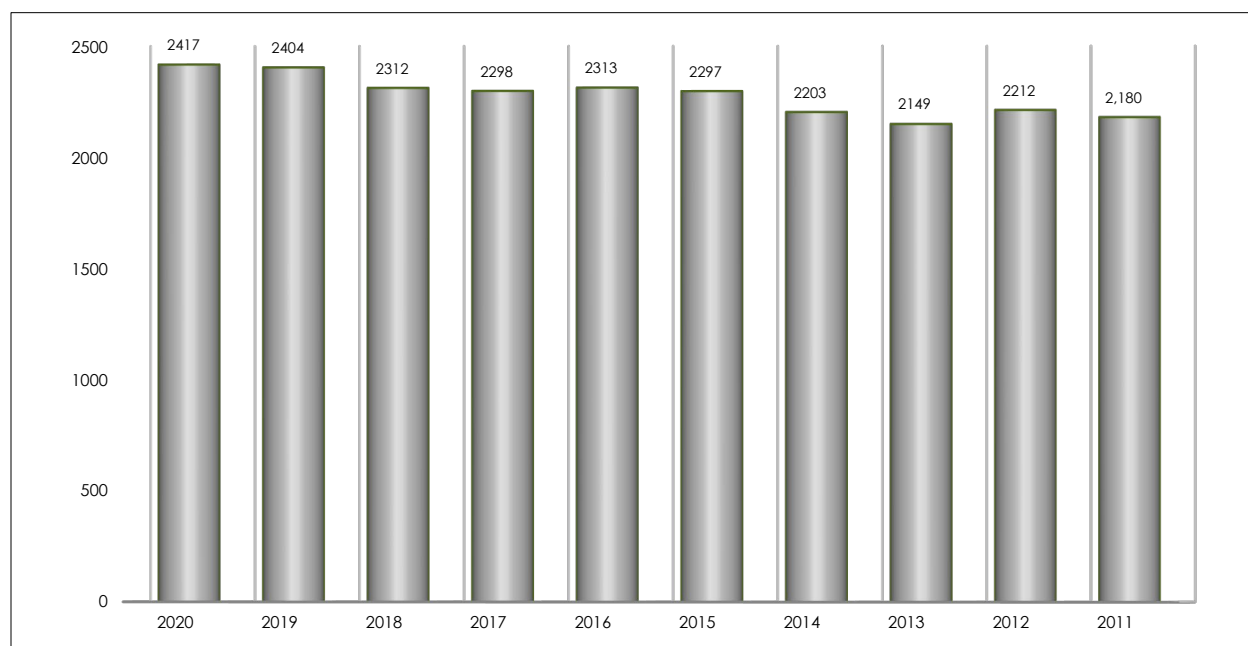
ACT – ACTIVITY REPORTS

ACT-1 I Membership

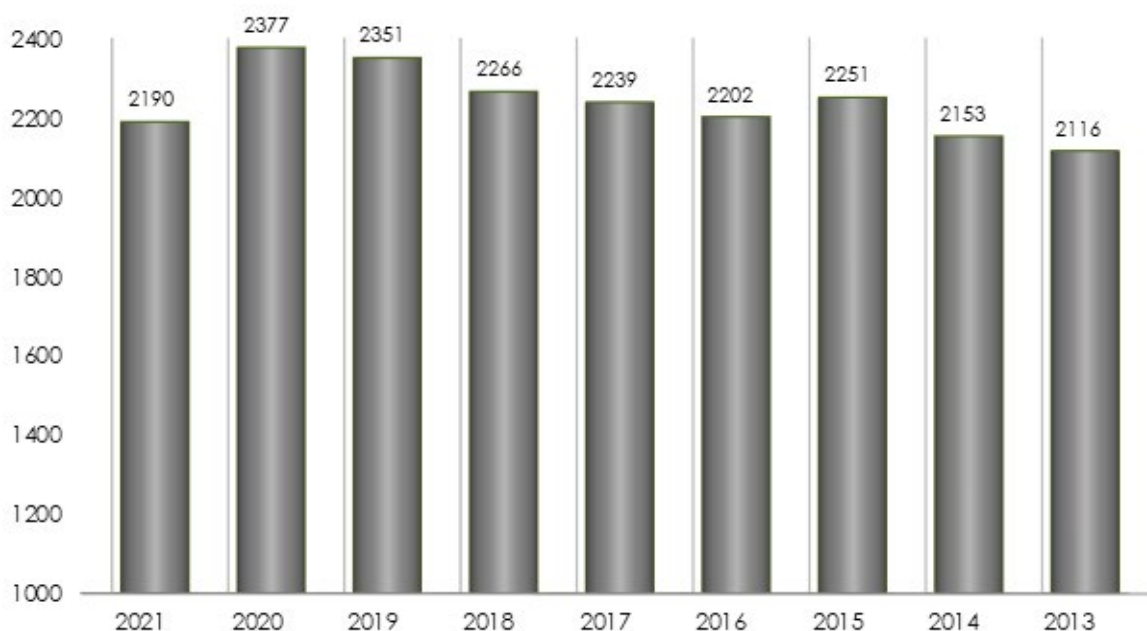
NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Board presented those items in open hearings of the 2021 NCWM Interim Meeting.

The chart and graph below show NCWM membership levels as of June 30 of recent years by membership categories. It should be noted that October 1 is the lowest level of membership for every fiscal year because it is the day that any memberships that were not renewed become lapsed. Significant growth is realized throughout the following 12 months as additional members renew, and new members are received. The potential growth remains significant and NCWM continues to enhance programs and services that add value to membership.

Annual Membership Totals as Reported in 2020									
Year Type	June 2020	June 2019	June 2018	June 2017	June 2016	June 2015	June 2014	June 2013	June 2012
Associate	742	768	780	817	803	806	802	818	842
Foreign Associate	106	96	90	87	89	76	64	50	58
Total Associate	848	864	870	904	892	882	866	868	900
State Government	831	805	696	658	675	665	603	558	589
Local Government	459	464	479	474	492	491	492	486	487
Total Active	1290	1269	1175	1132	1167	1156	1095	1044	1076
NIST	17	15	15	16	14	16	16	16	16
Other Federal Government	8	10	11	10	11	11	9	10	11
Foreign Government	15	14	16	14	14	13	13	13	14
Retired	239	232	225	222	215	219	207	198	195
Total Advisory	279	271	267	262	254	259	242	237	236
Grand Total	2417	2404	2312	2298	2313	2297	2203	2149	2212

Annual Membership Totals as of June 30, Each Year**Annual Membership Totals as Reported in 2021**

Year Type	Mar 2021	Mar 2020	March 2019	March 2018	March 2017	March 2016	March 2015	March 2014	March 2013
Associate	712	726	739	760	787	758	779	779	803
Foreign Associate	98	99	90	88	82	80	74	55	51
Total Associate	810	825	829	848	869	838	853	834	854
State Government	672	817	796	684	644	624	658	598	550
Local Government	427	456	458	468	467	487	484	477	477
Total Active	1099	1273	1254	1152	1110	1111	1142	1075	1027
NIST	16	17	16	15	15	15	16	15	16
Other Federal Government	7	8	10	11	12	10	11	8	10
Foreign Government	12	15	15	16	13	14	12	13	13
Retired	246	239	227	224	219	214	217	208	196
Total Advisory	281	279	268	266	259	253	256	244	235
Grand Total	2190	2377	2351	2266	2239	2202	2251	2153	2116

Annual Membership Totals as of March 31, Each Year

ACT-2 I Meetings

The 105th NCWM Annual Meeting opened on July 15, 2020. Due to the COVID-19 pandemic, travel was not possible so there was not a quorum. The meeting was adjourned to January 10, 2021. See agenda item ACT-7 for details. The 105th Annual Meeting concluded on January 12, 2021, preceding the 2021 NCWM Interim Meeting.

The 106th NCWM Annual Meeting will be held July 18-22, 2021 at the Hyatt Regency Hotel, in Rochester, New York. This hotel is situated along the Genesee River. It is newly renovated and is the tallest, most upscale hotel in the Finger Lakes Area. You will enjoy breathtaking views, restaurants, entertainment, and shopping in the walkable area.

In January 2022, NCWM will hold the Interim Meeting at the Westin Tampa Waterside in Tampa, Florida. For more information about this meeting, contact Ms. Elisa Stritt, NCWM Meeting Planner, at (402) 434-4872 or elisa.stritt@ncwm.com.

Interim Meetings:

January 9-12, 2022 Westin Tampa Waterside, Tampa, Florida

January 8-11, 2023 Hyatt Regency Hotel, Savannah, Georgia

January 2024: TBD

Annual Meetings:

July 18-22, 2021 106th Annual Meeting: Hyatt Regency Hotel, Rochester, New York

July 10-14, 2022 107th Annual Meeting: Hotel Murano, Tacoma, Washington

July 2023: TBD Southern Region

The Board of Directors strives to plan meetings in locations that have reasonably priced airline service and are within government per diem rates. The Board also evaluates locations and bids from hotels based on their ability to offer comfortable rooms, quality meeting space, and a variety of nearby entertainment and dining options.

ACT-3 I Participation in International Standard-Setting

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for Open Hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Board presented those items in open hearings of the 2021 NCWM Interim Meeting.

Dr. Charles Ehrlich (NIST OWM) provided a report at the 2020 Interim Meeting and during Open Hearings of the 106th NCWM Annual Meeting (see Appendix A for a copy of the full report). The Board of Directors expresses appreciation to Dr. Ehrlich for his report and the important efforts of the NIST Office of Weights and Measures around the world.

See the NTEP Committee Agenda for additional reports on NCWM's involvement internationally, including the Mutual Recognition Arrangement (MRA) with Measurement Canada and the OIML Certificate System (CS).

ACT-4 I Associate Membership Committee Activity

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Board presented those items in open hearings of the 2021 NCWM Interim Meeting.

Approximately 35% of NCWM memberships is Associate members. The Associate Membership Committee (AMC) is organized under the Bylaws of the National Conference on Weights and Measures, Inc. Also, AMC operates by separate Bylaws, which are available on the Committee page of www.ncwm.com. AMC meets at least 2 times per year in conjunction with NCWM Interim and Annual Meetings, and they invite all to attend. The AMC consists of between 5 and 10 members who, amongst themselves, elect officers to serve as Chair, Vice-Chair, and Secretary/Treasurer. See Appendix B for information on current members and officers.

AMC has established a reputation for promoting and improving NCWM and has demonstrated its desire to improve understanding of weights and measures activities in the public and private sectors.

The NCWM membership dues for Associate members of \$90 are \$15 higher than that for Active or Advisory members. The extra \$15 is not for NCWM but rather is placed in a separate account referred to as the AMC Fund. The AMC has the discretion to allocate the funds in various ways. One means of allocating these funds is to provide grants in support of weights and measures training. The Committee receives applications and awards training grants from the AMC fund following their "Guidelines for Selection and Approval of Training Funds," which are posted on the Committee's webpage on www.ncwm.com. Downloadable applications for training grants and reimbursement forms are also available at this site.

The criteria to receive AMC funds for training are as follows:

1. Funding request forms that are complete, specific, and detailed will receive priority attention for approval. Based on the degree of missing or ambiguous information provided, individual requests may not be given any consideration during the AMC review process, pending further clarification.
2. Preference is given to training requests that benefit higher numbers of participants over those for fewer or single-person benefit. The Committee also gives priority consideration to multi-state training that encourages uniformity.
3. In general, attending meetings such as NCWM Annual Meetings, Interim Meetings, or Regional Associations meetings will not be considered training.
4. As a lower priority, the committee will consider requests for the purchase of training materials, but not requests for the purchase of assets (such as projectors).

5. Reasonable funding for travel and expenses will be considered if it is necessary to acquire an “expert trainer” that would benefit a high number of weights and measures officials. This will be an option when qualified volunteers are not available.

At the 2020 Interim Meeting and 2021 Annual Meeting, Mr. Chris Guay encouraged members to apply for funding assistance for training events. The goal of the AMC is to exhaust the funds annually. The funds may be used for such things as trainer expenses, meeting room rental, and training materials. Regulatory agencies are encouraged to make use of these funds to improve training opportunities and the expertise of inspection personnel. An attendee requested that the AMC consider also using some of the funds to offset student travel for officials who otherwise would not be able to attend. Attendees thanked the AMC for funding training.

AMC members are also looking for new, perhaps innovative ways to play a more effective role in the NCWM structure to further improve the organization.

The AMC met during the 2020 Interim Meeting on Tuesday morning, January 28, at 7:30 a.m. All annual meeting attendees, especially NCWM Associate members, are encouraged to attend AMC Meetings. (see Appendix B for the AMC Meeting Draft Minutes from January 2020.)

The AMC met during the 106th Annual Meeting. All meeting attendees, especially NCWM Associate members, are encouraged to attend AMC Meetings. (*See Appendix B for the AMC Meeting Draft Minutes from January 2020.*)

ACT-5 I Task Groups, Subcommittees, Steering Committees

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Board presented those items in open hearings of the 2021 NCWM Interim Meeting.

Focus Groups, Task Groups, Subcommittees, Steering Committees:

Focus groups, task groups, subcommittees, and steering committees are created by the NCWM Chair and operate as defined in NCWM Policy 1.5.1. Subgroups Supporting the Work of the Organization. A task group is given a specific charge, and it reports to the appropriate NCWM standing committee. A task group will disband after completing its assignment. A Subcommittee is charged with ongoing responsibilities in support of a standing committee in a specific field of expertise. A steering committee is charged with unbiased fact-finding that will assist NCWM membership in decision processes for difficult issues. A steering committee will disband upon completion of its specific charge.

NCWM offers resources to these task groups and subcommittees including meeting space at Interim and Annual Meetings, conference calling and web meeting services, group email services, a dedicated web page for posting and archiving documents related to their work, and broadcast e-mail services to reach targeted audiences. Additionally, NIST OWM has provided technical advisors and web meeting forums. These tools enable year-round progress of task group and subcommittee work.

Because NCWM task groups and subcommittees are part of the NCWM organizational structure and report directly to its standing committees, their proposals may appear in NCWM Publication 15 without first being vetted through a regional association. NCWM vets any such proposals through the open hearings of NCWM.

The Promotional Toolkit Task Group reports to the Board of Directors. Among the activities of this group, it has developed five videos, each showcasing inspection activities in the supermarket, scale inspections, retail motor fuel dispenser inspections, motor fuel quality, and checking the net contents of packaged goods and LP Gas Meter inspections. Mr. Stephen Benjamin (North Carolina) reported that the next video will be about grain analyzer inspections. He expects the next video to highlight laboratory metrology.

The Cannabis Task Group also reports to the Board of Directors. This group is addressing Scale Suitability, Method of Sale, Packaging, and Labeling, Water Activity in Packaged Products, and Inspector Safety. In 2020, Mr. James Cassidy reported that Ms. Fran Elson-Houston will lead the focus group on Inspector Safety. The Task Group’s goal

is to present a guidance document to the Board of Directors for comment and adoption by NCWM. In 2021, Mr. Cassidy reported that the Task Group is developing Form 15 proposals to amend NCWM standards in the NIST Handbooks. This is based on assurance from Dr. Douglas Olson (NIST OWM) that NIST will be able to publish the standards.

At the 105th NCWM Meeting, Chair VanBuren requested anyone with interest in being the Safety Subcommittee Chair to reach out to him or PDC Chair Marc Paquette.

At the 106th Annual Meeting, Chair Prince appointed a new Bylaws Review Task Group in August 2020 to also report to the Board of Directors. Mr. Craig VanBuren (Michigan) is Chair of this group. The group made recommendations to amend NCWM Bylaws allow NCWM to conduct virtual voting in the future under certain emergency circumstances. See Board of Directors Item SPB-21.4 for details.

Immediate Past Chairman, Mr. Craig VanBuren (Michigan) requested anyone with interest in being the Safety Subcommittee Chair to reach out to him or PDC Chair Mr. Marc Paquette (Vermont).

Reporting to the Board of Directors:

Promotional Tool Kit Task Group:

2020 & 2021 Chair

Mr. Stephen Benjamin
North Carolina Department of Agriculture
Phone: (919) 707-3225
Email: steve.benjamin@ncagr.gov

Cannabis Task Group:

2020 & 2021 Co-Chair

Mr. James Cassidy
Massachusetts Standards Division
Phone: (617) 349-6133
Email: james.cassidy@state.ma.us

2020 & 2021 Co-Chair

Mr. Charles Rutherford
CPR Squared, Inc.
Phone: (612) 655-5494
Email: charlie@sprsqaredinc.com

Bylaws Review Task Group:

2021 Chair

Mr. Craig VanBuren
Michigan Department of Agriculture
Phone: (517) 655-8208
Email: vanburenc9@michigan.gov

Reporting to the Laws and Regulations Committee:

Fuels and Lubricants Subcommittee:

2020 & 2021 Chair

Dr. Bill Striejewski
Nevada Division of Measurement Standards
Phone: (775) 353-3792
Email: wstrijewski@agri.nv.gov

Packaging and Labeling Subcommittee:

2020 & 2021 Chair

Mr. Christopher Guay
Procter and Gamble Co.
Phone: (513) 983-0530
Email: guay.cb@pg.com

Reporting to the Specifications and Tolerances Committee:

Credit Card Skimmer Task Group:

2020 Chair

Mr. Hal Prince

Florida Department of Agriculture and Consumer Services

Phone: (850) 921-1570

Email: harold.prince@FDACS.com

Weigh-in-Motion Vehicle Scale Task Group:

2020 Co-Chair

Mr. Alan Walker

Florida Bureau of Standards

Phone: (850) 274-9044

Email: alan.walker@FDACS.gov

2020 Co-Chair

Mr. Tim Chesser

Arkansas Bureau of Standards

Phone: (501) 570-1159

Email: tim.chesser@aspb.ar.gov

Field Reference Standards Task Group:

2020 Chair

Mr. Jason Glass

Kentucky Department of Agriculture

Phone: (502) 573-0303

Email: jason.glass@ky.gov

2021 Chair

To be determined

Milk Meter Tolerance Task Group:

2021 Chair

Mr. Charlie Stutesman

Kansas Department of Agriculture

Phone: (785) 564-6681

Email: charles.stutesman@ks.gov

Verification Scale Division (e) Task Group:

2021 Chair

Mr. Doug Musick

Kansas Department of Agriculture

Phone: (785) 564-6681

Email: doug.musick@ks.gov

Reporting to the Professional Development Committee:

Safety Subcommittee:

Chair

To be determined

Skimmer Education Task Group:

2021 Co-Chair

Ms. Paige Anderson
National Association of Convenience Stores (NACS)
Phone: (703) 518-4221
Email: panderson@convenience.org

2021 Co-Chair

Mr. John McGuire
New Jersey Weights and Measures
Phone: (501) 570-1159
Email: m McGuire@dca.njoag.gov

ACT-6 I Regional Association Activities

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Board presented those items in open hearings of the 2021 NCWM Interim Meeting.

2020 Meetings

WWMA Annual Meeting

Sept. 27-Oct. 1, 2020
Golden, Colorado
Contact: Mahesh Albuquerque, mahesh.albuquerque@state.co

SWMA Annual Meeting

October 4-7, 2020
Washington, D.C.
Contact: Ron Johnson, ronald.johnson@dc.gov

NEWMA Interim Meeting

To be determined
Contact: James Cassidy, james.cassidy@state.ma.us

CWMA Interim Meeting

To be determined
Contact: Sherry Turvey, sherry.turvey@ks.gov

2021 Meetings

CWMA Annual Meeting

October 18-21, 2021
Wisconsin Dells, Wisconsin
Contact: Ms. Sherry Turvey, sherry.turvey@ks.gov

NEWMA Annual Meeting

October 5-7, 2021
Virtual Meeting
Contact: Mr. James Cassidy, james.cassidy@mass.gov

WWMA Annual Meeting

September 26-30, 2021
Golden, Colorado
Contact: Mr. Mahesh Albuquerque, mahesh.albuquerque@state.co.us

SWMA Annual Meeting

October 10-13, 2021
New Orleans, Louisiana

Contact: Dr. Bobby Fletcher, bfletcher@ldaf.state.la.us

ACT-7 V COVID-19 Impact on the 105th Annual Meeting

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and “Robert’s Rules of Order” items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

Source:

NCWM Board of Directors (2020)

Purpose:

Add the following report of activity to the NCWM Annual Report.

Item Under Consideration:

Include the following in the NCWM Annual Report.

105th NCWM Annual Meeting

July 15, 2020

Michigan Department of Agriculture and Rural Development
E.C. Heffron Metrology Laboratory

NCWM Chair VanBuren convened the 105th NCWM Annual Meeting and conducted the following business:

- Call to Order: 10:00 a.m. EDT
- Chair VanBuren recognized that there was not a quorum and NCWM would be unable to conduct the annual business of the Conference.
- Chair VanBuren made a motion to adjourn the meeting to January 10, 2021 at 9:00 a.m. at the Sirata Beach Hotel and Conference Center at St. Pete Beach, Florida.
- Meeting Adjourned: 10:05 a.m. EDT

Background/Discussion:

Because of the 2020 COVID-19 pandemic, NCWM was unable to assemble a quorum to conduct the business of the 105th NCWM Annual Meeting as scheduled for July 12-16, 2020. This created a dilemma for the Board of Directors. NCWM Bylaws require that the Annual Meeting be held approximately 6 months following the Interim Meeting. Additionally, NCWM cannot legally conduct its Annual Meeting virtually or electronically.

Three points were considered to come to this conclusion:

1. NCWM Bylaws reference Roberts Rules of Order, which prohibit virtual or electronic meetings unless specifically allowed in the organization’s bylaws.
2. NCWM Bylaws do not specifically allow for virtual or electronic Annual Meetings.

3. State law requires corporations to operate within their bylaws.

On the advice of legal counsel, Chair VanBuren assembled a small gathering of NCWM membership on July 15 to open the Annual Meeting and then adjourn it to a later date.

The Board of Directors also considered the annual election of officers. NCWM Bylaws, Article VI, Section 2, part B states the following:

- The Chair-Elect will be elected at the Annual Meeting one year prior to the term of service as Corporation Chair.
- After serving one year as Chair-Elect, the incumbent will succeed to the office of Corporation Chair.

For this reason, Chair-Elect Prince of Florida succeeded Craig VanBuren as NCWM Chair at the conclusion to the above July 15, 2021 meeting and Chair VanBuren moved to the office of Immediate Past Chair. State law mandates that other directors serve beyond the end of their terms until such time that regular elections can be held. That election will be in January 2021 when the 105th Annual Meeting reconvenes.

The Board set the following schedule for the January 2021 meetings:

105th NCWM Annual Meeting

Sunday, January 10: Task Group and Subcommittee Meetings

Monday, January 11:

- Morning: Open Hearings: *(voting items only)*
- Afternoon: Committee Work Sessions: *(voting items only)*
- Evening: Addendum Sheets: *(voting items only)*

Tuesday, January 12:

- Morning: Regional Meetings
- Afternoon: Voting Session and Closing Ceremony

2021 NCWM Interim Meeting

Wednesday, January 13: Open Hearings *(all remaining items)*

Thursday, January 14:

- Morning: Open Hearings
- Afternoon: Committee Work Sessions

Friday, January 15:

- Morning: Technical Session and Joint Committee Meeting, adjourning by noon

NCWM is incorporated in the State of Nebraska, which allows for virtual voting provided that the association Bylaws allow it. NCWM Bylaws do not. NCWM recognizes Robert's Rules of Order. In 2020, Robert's Rules of Order provided an interpretation to state that associations which do not allow for virtual voting may still do so, provided the association ratifies the results at the next opportunity to have an in-person quorum. The Board hopes that this can happen at the 106th Annual Meeting in July 2021. All technical items will be placed on a single consent calendar. Business items presented by the Board of Directors will be on a separate vote of the General Membership.

If NCWM is not able to assemble an in-person quorum in July 2021, it has the option to pursue a waiver through the state Attorney General’s Office to recognize the results of the virtual vote in January.

Dr. Olson of NIST OWM added that there are no restrictions to publishing the standards once they are ratified. If ratified in July 2021, they will be included in the 2022 Handbooks.

SPB – STRATEGIC PLANNING, POLICIES, AND BYLAWS

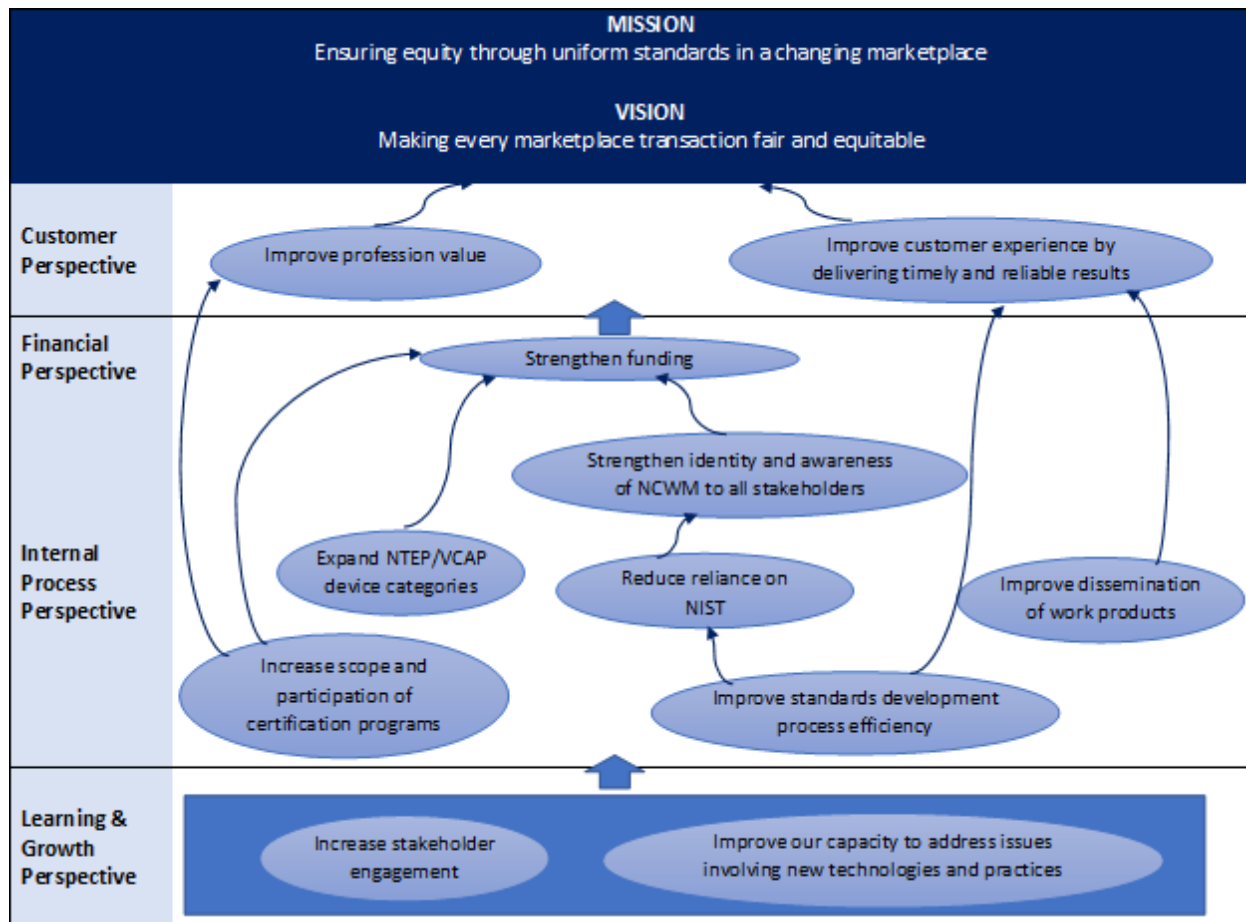
SPB-1 I Strategic Planning

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Board presented those items in open hearings of the 2021 NCWM Interim Meeting.

The Board of Directors is engaged in strategic planning with the assistance of LBL Strategies, a professional consulting firm. The process began with an environmental scan of a sampling of membership to help guide the direction of the plan. The final planning session with LBL strategies was held in November 2019, and their services to NCWM are concluded.

Through the planning process, the Board has established a “strategy map” to guide the organization toward its mission and vision. The main elements of the strategy map are:

- Learning and Growth Perspective,
- Internal Process Perspective,
- Financial Perspective, and
- Customer Perspective



At the 2020 Interim Meeting, Chair VanBuren described the process the Board followed under the guidance of LBL Strategies, LLC in developing the plan, beginning with surveys and phone interviews with various stakeholders. He presented the feedback the Board received from stakeholders who formed the input to the process. See Appendix C. He then presented each of the following strategic plan outcomes for comments from attendees following a brief synopsis of each outcome (bulleted items below each Outcome). Those comments are summarized below.

The Board is also considering the recommendations of the Charter Team in Item SPB-2 of this report as input in the planning process. For this reason, Item SPB-2 will be withdrawn will be considered as part of this item. See Appendix D for the complete Charter Team Report.

Outcome: Outreach to Stakeholders (Perspective: Increase stakeholder engagement)

- **NCWM staff should notify industry stakeholders who may not monitor NCWM's agendas of new proposals that affect them.**

NCWM has previously relied on NIST OWM for this outreach, but NCWM has a responsibility to provide transparency and due process.

Summary of Member Feedback:

- Increase outreach to consumer groups and associations for participation. As an example, NCWM could notify the Dairy Farmers of America (DFA) of the proposal this year to lessen tolerances on vehicle-mounted milk meters.

- Do outreach to industry in such a way that it helps overcome the “oppositional” dynamic between regulators and regulated industries.
- States should consider doing outreach to industry within their state.
- We as a community rarely reach out to the public and consumers and we need to find ways to engage them.
- Outreach is important, but how will the Board allocate resources to do it?
- NIST has the authority to work with governments and other agencies and nations, which most states are limited from doing and we have had a very nice working relationship between NIST and NCWM in this regard.
- What has NIST done or not done regarding outreach and why can’t NCWM and NIST couldn’t work together on this. Chair VanBuren noted he couldn’t comment on whether NIST has or has not been reaching out to stakeholders.
- If this is related to a singular issue it raises the question of why a 100-year history should be abandoned? Chair VanBuren cited an issue relating to pet chews and acknowledged there should have been more back and forth dialog with NIST on this. He clarified that NCWM is not trying to replace NIST in the role of outreach, but NCWM needs to take more responsibility for that part of the process. The Board would need to consider costs, plans, and expectations.
- NCWM should contact the organizations that are submitting letters and try to get their participation.

Outcome: Develop Jurisdictional Outreach (Perspective: Increase stakeholder engagement)

- **Create a marketing plan for increased participation and membership and encourage organic growth through recruitment**
- **Create recognition program for 100% membership within a state or local program**
- **Publicize NCWM meetings to weights and measures officials in the general area where being held**
- **Support rulemaking among the states requiring inspector membership to obtain important benefits including the standards, training opportunities and certifications**

Summary of Member Feedback:

- Help regulators gain legislative and public support for their programs. Weights and measures officials are typically not permitted to talk with legislatures to argue for support for their programs.
- Do lobbying; create Public Service Announcements, work with organizations like the Farm Bureau and the National Association of State Directors of Agriculture, and partner with grassroots-level organizations.
- There is value in educating all these stakeholders, including legislative bodies, commissions, and industry (even when there aren’t immediate issues at stake) do not underestimate the power that such bodies have in advocating for support on a regular basis.
- It is important to educate consumers and find ways to engage them to advocate for weights and measures, particularly given the large numbers in this stakeholder group.
- Administrators should partner with other agencies, which strengthens their influence with legislators.

- Few people speak in support of weights and measures’ budgets in these venues; lobbyists are typically used to advocate for issues. NCWM study the idea of using lobbyists.
- It is critical for this general kind of outreach to involve state directors. Don’t make assumptions about the needs of individual states.
- We need to consider how to change the mindset of some industry members who may not recognize the value of weights and measures in helping to ensure all businesses are held to the same standards.
- NCWM focusses on industries, and perhaps it can improve on consumer awareness as a means of increasing support for programs.
- People should share the materials including the videos in the Promotional Toolkit Work Group with stakeholders. Legislators also respond better to pictures and graphs than letters.
- Encouraging members to do outreach to potential members and attendees.
- Hiring a communications or public relations person and create additional, hands-on, training programs for field officials.

Outcome: Expand Device Types Subject to NTEP Certification (Perspective: Expand NTEP/VCAP device categories)

- **Device types already appearing in NIST Handbook 44**
- **Medical Devices**
- **THC Analysis Instruments for hemp law enforcement**

Summary of Member Feedback:

- There may be an opportunity to grow the scope of NTEP for device types already appearing in NIST Handbook 44.
- Scale manufacturers have requested standards and NTEP certification for medical scales. FDA does not have standards for these, and the manufacturers claim the United States is the only country without standards.
- Would there be liability associated with certifying medical scales?
- Be sure NTEP properly defines the evaluation criteria before issuing certificates on new device types.
- Finally, there was concern that NTEP may have too much backlog to handle additional requests for certifications. Mr. Onwiler agreed that backlog was once a problem, but for the last ten years, the number of open projects has been around 90. This is not considered backlog, but merely work in progress.
- Weights and measures lack expertise or authority over medical devices.
- Why don’t weights and measures jurisdictions regulate or have authority over certain device types that should be regulated?
- Consider NTEP certification for timing devices and measuring devices such as those dispensing water and ice.

The Board is also considering the development of standards and NTEP certification for THC analysis instruments for industrial hemp law enforcement. This also came at the request of a device manufacturer.

Outcome: Expand the Scope of VCAP (Perspective: Expand NTEP/VCAP device categories)

- **Communicate with key industry and regulators to identify potential areas**
- **NTEP Committee would develop proposals and conduct open hearings**
- **NTEP Committee would make recommendations to the Board to amend Publication 14 Administrative Policy to add device types to the scope of VCAP**

NCWM will talk to industry and regulators to identify potential areas for VCAP expansion. The NTEP Committee would develop proposals for any identified device types. This would require a change to Publication 14 Administrative Policy, so, ultimately, the Committee would make recommendations to the Board of Directors.

Outcome: Copyright and Publish Handbooks 44, 130 and 133) (Perspective: Reduce reliance on NIST and strengthen identity and awareness of NCWM to all stakeholders)

- **NCWM should look to copyright and publish**
- **Must work with NIST on a transition plan**

Summary of Member Feedback:

- Can NCWM legally copyright the standards?
- Why is autonomy important for NCWM?
- This effort would require additional staff and costs to NCWM. Can NCWM afford to publish the standards without increasing fees?
- NIST spends significant resources in staff time and publishing costs to prepare and publish the handbooks. Has the Board estimated the costs of taking this on? Where would such resources come from? Will this result in an increase in membership costs?
- Members value that NIST technical experts provide interpretations of the provisions of NIST Handbook 44, 130, and 133 and provides continuity and neutrality. What would the impact be with NIST no longer providing interpretations?
- Would this affect the availability and affordability of the handbooks? Would they remain online for free download? Some jurisdictions routinely direct people to the free handbooks on the NIST website and this would represent a significant impact to those constituents.
- If the handbooks would remain free with the proposed change, what is the rationale for copyrighting them?
- Jurisdictions that adopt documents published by other private organizations spend thousands of dollars to obtain them. One member shared the opinion it is wrong that people must pay to find out the requirements with which they need to comply.
- What will the impact be on small companies?
- Tests administered by some states are open-book tests, charging a fee for testing and a fee for the required handbook may be a burden for some companies.
- NIST publishes other handbooks such as the 105 Series Handbooks for laboratory metrology. How would this proposed change affect those publications?

- Legislation or rulemaking can be difficult in some states, including:
 - The need to educate lawmakers to make such changes and the difficulty in the need to make changes.
 - Some jurisdictions must change both statutes and rules.
 - Limits on the number of changes their agency is permitted to make per session.
 - Opening a bill to make such changes may have unintended consequences.
 - The frequency with which such changes can be made varies widely and this could mean a lag in uniform adoption.
 - Some states may choose to withdraw from NCWM rather than go through legislation changes
- NIST brings expertise to preparing the handbooks for publication, puts a great amount of time and resources into publishing the handbooks, and provides continuity.
- Is this an effort purely to raise awareness of NCWM as a standards organization, or is it about increasing revenue?
- Reference to NCWM already appears on the NIST Handbooks 44, 130, and 133; how much more recognition is needed? Should it be more prominent?
- Might this cause a decrease in the NIST Office of Weights and Measures budget, less involvement of OWM and less support by NIST of NCWM going forward?
- There may be other unintended consequences.
- If the proposed plan is not successful, what will the impact be on the States?
- Some acknowledged the concern of a weak brand, but questioned why autonomy from NIST is so important?
- Is this effort driven by a move to “unbind” the NCWM and NIST? What are the consequences of doing so?
- Taking over publication of the handbooks is way down on the list of priorities; there are many things that are more important.
- Since the NCWM and NIST are already working in partnership for developing and publishing the handbooks and this is a role of NIST, why don't we focus on how we can work together to accomplish things that haven't already occurred?

Other comments and suggestions were as follows:

- Consider co-ownership of the handbooks while retaining NIST as the publisher.
- Redesign the cover to give increased prominence to NCWM.
- Consider finding a middle ground that promotes NCWM while maintaining NIST credibility.
- Bring NIST into the strategic planning process with the Board.
- Copyrighting is not as scary as it may seem. NCWM would be adopting the model set by other standards organizations that copyright, publish, and distribute their standards.

- Consider creating model legislation outside of opening laws or rules to recognize NCWM standards.
- Prioritize the outcomes before moving forward.
- Treat the copyright decision as a business item, subject to a vote of the membership. If such a major change in the collaboration with NIST is not brought to a vote, trust between the Board and membership is being violated.

The Board appreciates the thoughtful comments, questions, and suggestions. The question was raised as to why NIST was not included in the development of the strategic plan. Chair VanBuren acknowledged that NIST should have been invited to participate and stated NIST will now be asked to participate in the planning. Chair VanBuren assured participants that copyrighting the standards is not an effort to raise revenues, but rather it is about NCWM taking responsibility for the entire process.

Outcome: Support Professional Growth: (Perspective: Improve the Standards Development Process)

- **Expand the Professional Certification Program**
- **Training:**
 - **NTEP**
 - **Other opportunities?**
- **We hope NIST will continue and expand their offerings of technical training**

NCWM will continue to grow the Professional Certification Program by offering exams in additional weights and measures disciplines. NCWM would like to offer NTEP training for weights and measures officials, and the Board would consider other opportunities that may arise. The Board hopes that NIST will be able to expand its training offerings as well.

Summary of Member Feedback:

- Offer regional training, co-teaching with NIST, and training for cannabis sites, using the “extension agents” model.
- Do outreach to grade schools during Weights and Measures Week and share guidance on activities and for materials such as rulers to distribute.
- Some state officials have provided a great deal of training, but it takes time away from their responsibilities, so more trainers are needed, raising the question of who those will be.
- We all hope more trainers will step forward, but will we be able to sustain that model and ensure the expertise is maintained. Chair VanBuren noted this is an issue that is still being explored and acknowledged that using state regulators alone may bring with it concerns about jurisdictional bias.
- NCWM could hire a full-time or part-time person to deliver training.
- Make NTEP training a priority for field officials to become NTEP evaluators and NTEP training in general to continue to provide integrity to NTEP.
- The WWMA is continuing to offer regional training, but not in conjunction with its Annual Meeting. One WWMA director, noted it was difficult to get participation and those who attended had to choose between participating in the meeting and participating in the training. Another WWMA director commented that

offering regional training allowed him to justify bringing more people to the meeting and expose them to the process and give them more insight and experience with the process for handbook development.

- The CWMA and NEWMA do offer training in conjunction with the meetings and see it as a valuable networking opportunity between attendees of the two concurrent events. One CWMA member noted that involvement of multiple jurisdictions in one training event also helps reduce the divergence of training from state to state. A NEWMA member noted that offering training as part of the regional meeting is not only a way to get participation of future members of the region but possibly the NCWM as well.
- The overwhelming need for training lends credibility to the Professional Development Committee and its role in the weights and measures community and to the NCWM. One member commented that, if the NCWM plans to pursue offering NTEP and other training and expanding professional certification.
- NCWM needs to hire someone with expertise in certification who understands how to grow that program.
- Members expressed compliments and gratitude for the quality training that NIST provides, including their ability to present the training without bringing jurisdictional bias into it.
- Since NIST's funding is limited and training is so important, agencies should be willing to pay for training.
- This item was presented as if NCWM intended to take over training. If this is not the intent, the presentation needs to be changed. Instead, NCWM and NIST should work together to find ways to provide more training. Mr. VanBuren responded that this is not the intent; the intent is to emphasize the need to find ways to present training.
- We need increased training. As a community we are weak on our ability to provide adequate training and my jurisdiction is regularly challenged on this point.

Outcome 5: Processes and Procedures (Perspective: Improve standards development process efficiency)

- **Consider recommendations by the Charter Team to improve the standards development process (See Board Agenda, Appendix C).**
 - **Concept 1: Improvements and Policy Changes to the Current Model**
 - **Concept 2: Implement Twice-per-Year Voting Sessions**
- **Assume responsibility for drafting and finalizing committee reports.**

Summary of Member Feedback:

Chair Van Buren explained that NCWM will consider the recommendations by the Charter Team, as contained in Appendix C. There were two concepts. The first contains improvements to the current standards development process, some of which have already been implemented. The second concept is to vote twice per year.

- There was support for considering the process of voting twice per year, provided it allows for each region to address any item before NCWM votes on it. A member warned that it might require careful planning. Another member stated opposition to the twice per year voting.
- Another element of this outcome is for NCWM to assume responsibility for drafting and finalizing committee reports. This was part of the Charter Team's Concept 1. The Board has been offered possible solutions for comments for several years, and it is now folded this into the strategic plan.
- Assign someone to each committee to take notes and draft reports so that the committee members can be fully engaged in the discussions. This may be a volunteer or paid position.

- Hire a stenographer for each committee; however, this can be expensive, and the stenographer would not be able to distinguish between relevant and nonrelevant information. The stenographer may also need to be involved in the Committee work sessions if this is pursued.
- Use audio recordings rather than taking notes. This practice would still require that someone play it back to generate a draft report.
- Have NIST to continue in its role and ensure the Committee members are actively participating in the process.
- NIST will continue to work with the committees to prepare the reports as long as they are publishing the NIST Handbooks 44, 130, and 133. This doesn't preclude the need for committee members to step up and take more responsibility. Chair VanBuren concurred with the need for committee members, in some instances, to be more actively involved and others seconded this observation.
- Having committee members take notes is valuable; having multiple sets of notes helps ensure that the full range of comments are captured on an item.
- A Board member commented that having NIST involved in making proposals to the committees and being involved in the discussions and working on the report is seen by some as a conflict of interest. Multiple members disagreed with this observation, with one member noting this is no different from individual Committee members putting forth proposals.
- Several comments were made in support of NIST continuing to prepare the reports with input by committee members and individual committee members taking more responsibility for reviewing and ensuring the correctness of the report.
- Members commented that they haven't seen issues with NIST slanting or incorrectly completing reports and asked for specifics rather than relying on rumors.
- Committee members are responsible for agreeing to the final report and that NIST OWM staff have no vote on the reports. NIST OWM circulates reports to the Committee for final review and approval, but Committee members need to do more than a cursory review. The Committee Chair is responsible for making sure this happens.
- Ensuring committee members are actively involved also invests them in the accuracy of the reports.
- There are differences in how Committees prepare their reports. Some Committees are already sharing responsibility in preparing content for the reports.
- We should return to the practice of having individual Committee members sign the reports to provide more visible and conscious ownership of the committee reports by Committee members.
- Someone must be responsible for putting out a quality report. Whatever ends up in the Committee report ends up in the handbooks.
- The most important thing that comes out of a meeting is the report that provides the basis for interpretation.
- Reports to be freely available on an ongoing basis.
- If we are lucky, we will have a Committee member who can do draft and finalize reports, however, not everyone is adept at taking notes and writing. Chair VanBuren commented this option has been taken off the table by the Board. At least one member emphasized the need for NCWM and NIST to work together.
- NIST has missed meetings due to the government furlough. This is historically rare, but Committee members were well capable of handling the process in those two instances.

- There are instances when NIST Advisors found problems with language and were the ones helping to ensure the committees are considering the right information.
- Improvements are needed to the overall process. The lack of consistency in the process at times has caused more difficulty and hurt feelings.
- There is an apparent lack of structure and rules in place for the many Task Forces and Work Groups, and a disregard for the rules that are in place.
- We need improved Committee training, better consistency in processes from one meeting to the next, willingness to withdraw poorly developed or technically unsound proposals, and extend Standing Committee rules to the Subcommittees.
- We need to find ways to educate and assist submitters in preparing their proposals; many proposals lack focus and clarity and the items linger on the agendas with no real progress.
- Committees need to provide more specific feedback to submitters to assist them in addressing gaps in their proposals. Such steps would be a help to the overall process.
- Address current problems with the overall process before considering twice-per-year voting.
- The details of the Board's thoughts on strategic planning should have been distributed to NCWM members at the time that the letter was distributed to Dr. Olson (NIST OWM) in July 2019. This would have provided members the opportunity to carefully consider the proposed direction and actions and be in a better position to share their views.
- NCWM and NIST to work together are encouraged to work together.

The Board of Directors engaged in strategic planning with the assistance of LBL Strategies, a professional consulting firm. The process began with an environmental scan of a sampling of membership to help guide the direction of the plan. The final planning session with LBL strategies was held in November 2019 and their services to NCWM are concluded.

The Board of Directors met with Dr. James Kushmerick, Director of the NIST Physical Measurement Laboratories, Dr. Olson, NIST OWM Chief and members of the OWM staff on January 24, 2020, prior to the 2020 Interim Meeting. A second meeting was held with NIST OWM on March 9-10, 2020. Following the March meeting, the Board of Directors shifted primary focus to keeping NCWM moving forward with operations and its mission during the pandemic. NCWM and NIST will continue to communicate and will resume work on the planning process when it is possible to meet in person again.

NCWM Chair Hal Prince reported that the Board has put strategic planning on hold during the pandemic and will resume the process when the Board of Directors and NIST OWM can meet in person. The Board looks forward to this opportunity to work together with NIST OWM when the work resumes.

Attendees expressed appreciation for the engagement and collaboration between the Board and NIST OWM as we move forward.

SPB-2 W Improve the NCWM Standards Development Process

Source:

NCWM Board of Directors (2016)

Purpose:

Assess the NCWM standards development process to determine ways to improve efficiency and participation.

Background/Discussion:

In January 2016, then NCWM Chair Buendel formed a Charter Team and set out four phases in developing recommendations to improve the standards development process. The Charter Team evaluated the NCWM's existing process and outlined its strengths and weaknesses and reported back to the Board of Directors in July 2016. The team identified potential changes to existing NCWM processes and considered their impact on the operation of Regional Associations, NIST, NCWM governance, and others to provide adequate regulations to users on a timelier basis.

The Charter Team has offered two concepts for consideration by the Board. Concept 1 is a series of recommendations to improve our existing process for standards development. Some of those recommendations have already been put in place, while others will require further discussion. Concept 2 is to hold voting sessions at both the January and July meetings of NCWM. See Appendix D for the complete report.

Concept 1: Improving the Current Model

- Better controls of time for presentations and comments during Open Hearings
- Managing testimony on Informational, Assigned and Developing items
- Reformatting of Publications 15 and 16 by grouping similar items
- Limitations on the ability to carry over items to the next year
- Increased emphasis on committee training
- Increased structure for subgroups such as Task Groups
- Regional Committee training
- Improved quality of new proposals and the evaluation of them by Regional Associations.
- Improved Committee reports that provide concise summaries and rationale

Concept 2: Voting Twice Each Year

- Two regions receive new proposals in the fall and the other two receive new proposals in the spring
- No item could come to a vote before all four regions have reviewed
- Items that carry over would only wait six months instead of 12 for further consideration.
- The length of Committee agendas would be reduced through more frequent voting.

Mr. Ross Andersen (New York, retired) expressed appreciation for the flexibility to allow a developing item to be upgraded to informational status by a Committee as late as December based on new information received from the developer. He believes items should not be brought to a vote until a consensus has been reached as opposed to just requiring a majority. Mr. Kurt Floren (Los Angeles County, California) requested serious consideration of the recommendation to vote twice per year. This would require a vote of the membership to amend the bylaws. The further discussion addressed the need to ensure that all regions have the chance to vet proposals and that an item not be adopted until it has been addressed at least two National meetings.

The Board withdrew this item and will consider the Charter Team recommendations within the new strategic plan.

SPB-3 W Publications 15 and 16 Committee Report Formats

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Board presented those items in open hearings of the 2021 NCWM Interim Meeting.

Source:

Committee Development Focus Group (2019)

Purpose:

Improve committee report formats to be more consistent and concise in how detail is provided for agenda items without sacrificing relevant content.

Item Under Consideration:

Adopt the following format for agenda items of the NCWM Standing Committees and Board of Directors for proposals to amend Handbooks 44, 130 and 133, NCWM bylaws and policies, and NTEP Publication 14: Administrative Policy.

[Item No.] [Status] [Title]

Source:

[Organization and year introduced into NCWM's agenda]

Purpose:

[Concise statement of intent, such as problem being fixed]

Item under Consideration:

[Proposed Language]

Previous Action:

(e.g.) 2016: Informational
 2017: Voting – Returned to Committee
 2018: Voting

Original Justification:

[From Form 15]

Arguments in Favor:**Regulatory:**

- A
- B
- C

Industry:

- A
- B
- C

Advisory:

- A
- B
- C

Arguments Against:

Regulatory:

- A
- B
- C

Industry:

- A
- B
- C

Advisory:

- A
- B
- C

Item Development:

[Explain any changes made to the original proposal and committee recommendations]

Regional Associations' Comments:

[Refresh each year based on regional reports]

Background/Discussion:

Each fall, NCWM Conducts a Committee Development Meeting for standing committee chairs, newly appointed Committee members, and NIST technical advisors. At the 2017 Committee Development Meeting, the Committee Chairs decided to form a focus group with the Executive Director to address some of the topics of that meeting. Participants were Ms. Lori Jacobson (South Dakota), Mr. Ethan Bogren (Westchester County, New York), Mr. Ivan Hankins (Iowa) and Mr. Don Onwiler (NCWM Executive Director). The Focus Group addressed the following items:

1. Open Hearing Protocol for Committee Chairs
2. Work Session Protocol for Standing Committees
3. Proper handling of Amendments from the floor during Voting Sessions
4. Improved Format for Agenda Items

When addressing format of agenda items, the focus group began by outlining the key elements of a good report, including:

- The justification that was provided by the submitter
- Arguments received by the committee in favor
- Arguments received by the committee against
- Committee deliberation and recommendations

Additionally, the focus group discussed and agreed upon the following considerations:

- Chronological Development: The Focus Group believes that the report should describe how the item evolved chronologically, but that it should not repeat the same comments from one meeting to another.
- Specific Comments: The Focus Group does not believe it is necessary to name each commenter. Simply include pertinent points in the report.

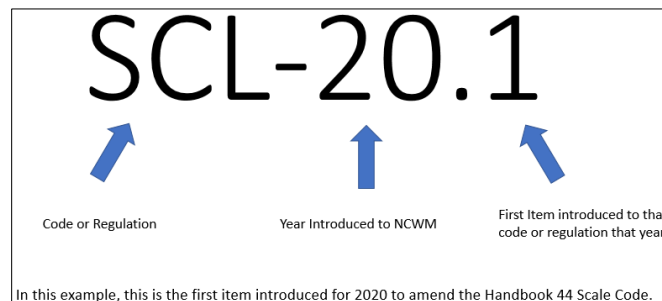
- **Bullet Points:** The Focus Group discussed the benefits of providing key points in bullet point fashion to simplify review for readers.

The Focus Group also discussed the present practice of placing "Background/Discussion" of agenda items in an appendix instead of putting that information within the agenda. The change was made in response to comments that there were too many pages of discussion to page through to see what is being proposed. The Focus Group is hopeful that a more concise presentation of the Committee report will make it more acceptable to return to the previous practice.

Appendix E shows an example of an actual 2018 agenda item reformatted to fit the proposed template. The example is Item SCL-7: S.1.8.5. Recorded Representations, Point of Sale Systems. The item was reduced from six pages to four pages using the new template. A reformatting of this significance would require review to ensure all relevant information has been retained.

By providing a more concise item format, members may be more accepting of placing the "Background/Discussion" of items on the agenda as shown in the sample format instead of in an appendix to the agenda. There was general support for this format at the 2019 Interim Meeting. However, there were requests to improve the item numbering system so that the item number never changes for the life of the item. Based on a recommendation from the audience, a new numbering system was implemented in fall 2019 whereby the item number will include the last two digits of the year submitted (e.g. GEN-19.1, SCL-19.2, SCL-19.3, etc.) and the number will not change through the lifecycle of a proposal.

At the 2019 Annual Meeting, the Board presented a new item numbering format that will allow an item to remain unchanged for the lifespan of the proposal as shown here:



Members requested that the items continue to be presented in the order reflecting the flow of the code or regulation being amended. There was some discussion of adding additional coding to identify more specifically the section of a code or regulation being amended. In general, the body supports the new numbering system. It will not affect how item blocks are organized and efforts will be made to continue mapping how items have been moved to blocks.

NCWM will implement the new format for all new proposals submitted in 2020. Carryover items will remain in their original format and will naturally fall from the agendas. Additionally, the background and discussion for each item will be removed from Appendix A and inserted into the body of the agenda. There will also be more clear distinction between the current proposal and those from previous reports.

At the 2021 NCWM Annual Meeting, it was noted that NCWM implemented this new format in 2020 and will apply it to all new proposals for 2021 and beyond. Carryover items will remain in their original format and will naturally fall from the agendas.

SPB-4 V Bylaws, Article IX, Section 2 – Standing Committees

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings

related to the COVID-19 pandemic. Under the current NCWM Bylaws and “Robert’s Rules of Order” items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

Source:

NCWM Board of Directors (2019)

Purpose:

Establish a Vice Chair for standing Committees and encourage the progression of each Committee member into the Chair position.

Item Under Consideration:

Amend the NCWM Bylaws as follows:

Article IX - Committees

Section 2. - Standing Committees

The Board of Directors may create and disband standing committees in the best interests of the Corporation. As referenced in Article IX, Section 1, the Chairman makes appointments to the several special purpose committees. The current standing committees are:

1. Committee on Specifications and Tolerances;
2. Committee on Laws and Regulations, and
3. Professional Development Committee.

Membership

The membership of each of the standing committees consists of five members, at least one member from each of the four weights and measures regions, appointed by the Corporation Chairman from the ~~active~~**Active** membership on a rotating basis for 5-year terms, or until a successor is appointed. In addition, every fifth year the Corporation Chairman shall appoint a nonvoting Associate Member Representative (AMR) to the Committee on Laws and Regulations and the Professional Development Committee. The AMR shall be nominated by the Associate Membership Committee and shall serve a 5-year term, or until a successor is appointed.

When it is necessary to make an appointment to any of the standing committees to fill a vacancy caused by the death, resignation, or retirement from active service by a committee member, the appointment is for the unexpired portion of the member's term.

Except as noted, each standing committee annually selects one of its active members, preferably its senior member, to serve as its chairman **and also select a vice-chair. The vice-chair shall assist the chair during open hearings and committee work sessions.**

Background/Discussion:

The Board of Directors sees committee service as an opportunity for many avenues of professional growth. This includes increased technical knowledge, networking, problem-solving, technical writing, public speaking and meeting facilitation. To get the full benefit of the experience, the Board believes that one should have a progression through the 5-year term, culminating with Committee Chairs.

This proposal establishes that preference in chair selection while still allowing the committee the flexibility in who it chooses as its chair each year. This proposal also establishes a vice-chair position, also selected by the committee to assist the chair in their duties.

Originally, the proposal designated the chair as the senior-most committee member, created a vice-chair position for next-in-line, and assigned duties to the vice-chair to serve as a scribe for the committee, as follows:

Except as noted, each standing committee annually selects one of its active members, preferably its senior member, to serve as its chairman. Standing Committee members shall serve 5-year terms, with the Active voting member having the greatest Committee seniority serving as Committee Chair and the Active member having the second-most seniority serving as Vice-Chair. When the senior-most Active member of the Committee has already served as Committee Chair, the next most senior Active member who has not served as Chair and the Vice-Chair should be the Committee member most likely to be Committee Chair the following year. The Vice-Chair member assists the Chair during open hearings and committee work sessions by serving as the scribe and committee report developer.

Members expressed concerns at the 2019 Interim Meeting with the concept of a committee vice-chair serving as a scribe. Some individuals may be quite competent for committee service but lack the keyboarding skills required to take notes during hearings and work sessions. An alternate suggestion was to assign a person to each committee who has the skills to take notes and who would also benefit in technical knowledge through exposure to the committee process. Another recommended hiring through temporary employment services to serve as scribes, but a lack of technical knowledge could be a problem.

Due to concerns from membership, the Board modified the proposal to remove scribe duties for the vice-chair. The Board will continue to consider options for a permanent scribe for each of the standing committees. The scribe should be one who does not participate in the discussions, but rather reflects the discussions in reports and follows the direction of the committee in this regard. Another goal is to bring consistency in style and format to committee reports year-to-year. All committee members remain responsible for keeping notes in these sessions.

The Board received comment at the 2020 Interim Meeting that this proposal sets the stage for the Vice-Chair to step into the role of Chair if the Chair is unavailable. Hearing no opposition, the Board designated this as a Voting item. Bylaw amendments are business items presented for a vote of the general membership at the Annual Meeting.

SPB-5 I Bylaws, Article IX - Committees

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Board presented those items in open hearings of the 2021 NCWM Interim Meeting.

Source:

NCWM Board of Directors (2020)

Purpose:

Streamline the standards development process by elevating the Fuels and Lubricants Subcommittee into a standing committee.

Item Under Consideration:

Amend the NCWM Bylaws as follows:

Article IX - Committees

...

Section 2 - Standing Committees

The Board of Directors may create and disband standing committees in the best interests of the Corporation. As referenced in Article IX, Section 1, the Chairman makes appointments to the several special purpose committees. The current standing committees are:

1. Committee on Specifications and Tolerances;
2. Committee on Laws and Regulations, and
3. **Committee on Fuels and Lubricants**
- ~~34.~~ Committee on Professional Development

Membership

The membership of each of the standing committees consists of five members, at least one member from each of the four weights and measures regions, appointed by the Corporation Chairman from the active membership on a rotating basis for 5-year terms, or until a successor is appointed. In addition, every fifth year the Corporation Chairman shall appoint a nonvoting Associate Member Representative (AMR) to the Committee on Laws and Regulations and the Professional Development Committee. The AMR shall be nominated by the Associate Membership Committee and shall serve a 5-year term, or until a successor is appointed.

When it is necessary to make an appointment to any of the standing committees to fill a vacancy caused by the death, resignation, or retirement from active service by a committee member, the appointment is for the unexpired portion of the member's term.

Except as noted, each standing committee annually selects one of its active members, preferably its senior member, to serve as its chairman.

...

Section 5 - Duties and Fields of Operation of Board of Directors and Committees

A. Laws and Regulations Committee

The Laws and Regulations Committee annually presents a report for Corporation action.

Its scope embraces all matters within the area of weights and measures supervision including:

1. the development and interpretation of uniform laws and regulations;
2. the study and analysis of bills for legislative enactment;
3. the establishment and maintenance of published guidelines and other effective means of encouraging uniformity of interpretation and application of weights and measures laws and regulations; and
4. liaison with Federal agencies, State agencies, and other groups or organizations on issues within the purview of the Committee. This role entails explaining, advocating, and coordinating Corporation positions, recommendations, and needs before Federal Government agencies, consumer groups, the associate NCWM membership, domestic and international standards organizations, industry, trade associations, and others. The goals are to provide and solicit information, develop a spirit of cooperation, and promote uniformity with the activities and standards of the NCWM.

B. Specifications and Tolerances Committee

The Specifications and Tolerances Committee annually presents a report for Corporation action.

Its scope embraces all matters dealing with:

1. specifications, tolerances, and technical requirements of any kind relating to scales, weights, measures, and weighing and measuring devices and accessories, including interpretation of such material whenever necessary,
2. standards and testing equipment for weights and measures officials,
3. procedures for testing commercial equipment, and
4. liaison with Federal agencies, State agencies, and other groups or organizations on issues within the purview of the Committee. This role entails explaining, advocating, and coordinating Corporation positions, recommendations, and needs before Federal Government agencies, consumer groups, the associate NCWM membership, domestic and international standards organizations, industry, trade associations, and others. The goals are to provide and solicit information, develop a spirit of cooperation, and promote uniformity with the activities and standards of the NCWM.

C. Fuels and Lubricants Committee

The Fuels and Lubricants Committee annually presents a report for Corporation action.

Its scope embraces all matters dealing with:

1. **standard specifications for fuels and lubricants,**
methods of sale for fuels and lubricants,
2. **labeling, documentation and terms in the sale of fuels and lubricants,**

3. standards for handling and storing fuels and lubricants, and
4. liaison with Federal agencies, State agencies, and other groups or organizations on issues within the purview of the Committee. This role entails explaining, advocating, and coordinating Corporation positions, recommendations, and needs before Federal Government agencies, consumer groups, the associate NCWM membership, domestic and international standards organizations, industry, trade associations, and others. The goals are to provide and solicit information, develop a spirit of cooperation, and promote uniformity with the activities and standards of the NCWM.

ED. Professional Development Committee

The mission of the Committee is:

To provide leadership to develop and implement uniform, quality weights and measures services in the areas of:

1. effective program management,
2. education, and
3. public relations.

....

Background/Discussion:

The purpose of the Fuels and Lubricants Subcommittee (FALS) is to provide expertise and support to the Laws and Regulations (L&R) Committee. The L&R Committee assigns agenda items to FALS for development. FALS then develops recommendations which they submit back to the L&R Committee for consideration by the general membership.

FALS has grown in terms of membership and challenging issues. The Board believes it is time to consider a more streamlined approach to standards development using the proven standing committee approach. All would still participate in the process through open hearings while allowing the smaller Standing Committee to develop the recommendations for consideration by the membership. Members outside of the Standing Committee would qualify for appointments to task groups to address specific items where the standing committee requests assistance.

An additional benefit would be reduced workload for the hard-working L&R Committee.

At the 2020 Interim Meeting, FALS Chair Striejewske and various FALS members expressed a desire to maintain the current structure of the subcommittee reporting to the L&R Committee. Members fear they may lose their voice in the process with the dissolution of FALS. They do, however, recognize a need to restructure how the subcommittee conducts business. FALS members also value the Sunday sessions at Interim and Annual Meetings, where they all come together to discuss items.

FALS members and some others of NCWM membership have expressed desire to maintain the subcommittee as a means of making the standards development more inclusive. FALS has worked over the course of the year since the January 2020 Interim Meeting to address issues raised with how FALS operates. FALS Chair Striejewske reported significant progress with a draft plan of operations which they will present to the Board upon completion. The board will review the report when it is submitted and share it with the Laws and Regulations Committee for consideration.

The Board will retain the proposal as an Informational item to allow FALS time to consider how they might improve their structure and process.

At the 2021 NCWM Interim Meeting, FALS Chair Striejewske reviewed the history of the Subcommittee and noted its “considerable growth without guardrails.” FALS members prefer to keep the Subcommittee structure and have held numerous meetings over the past year to address issues that led to the proposal to replace it with a Fuels and Lubricants Standing Committee.

Chair Striejewske formed a Focus Group chaired by Mr. Randy Jennings. The goal is twofold: to assuage concerns both within and without FALS that the lack of structure is hampering effective work, and to give the Board the confidence to maintain the status of FALS as a Subcommittee. The Focus Group has created an outline containing the following sections:

- Objective
- FALS Scope (purpose and duties)
- FALS Officers
- FALS Membership (including classification)
- Meetings
- Items – Changing Existing, or Proposing New Items
- Development of New Items by FALS
- Focus Groups
- Voting (within FALS)

The Focus Group hopes to complete its work in time for consideration by the Board at the July 2021 Annual Meeting.

At the 2021 NCWM Annual Meeting, all comments were in support of retaining the Subcommittee structure and efforts by the Subcommittee to improve efficiencies. FALS has submitted a draft document to the Board for review and feedback. The Laws and Regulations Committee which oversees FALS will also review the document and provide feedback to the Board of Directors.

The Board will review bylaws and policies to see if there are opportunities to better define structure, process, and procedures for all subcommittees.

SPB-21.1 W Article 1 – General, Section 4 - Dissolution

Source:

California Division of Measurement Standards

Purpose:

Update NCWM Bylaws to be more reflective of current status.

Item Under Consideration:

Amend NCWM Bylaws as follows:

Article I - General

...

Section 4 - Dissolution

The Corporation shall dissolve in the event that the number of members falls below one thousand (1,000) ~~two hundred and fifty (250)~~. Upon the dissolution of the Corporation, assets shall be distributed for one or more exempt purposes within the meaning of section 501(c)(6) of the Internal Revenue Code, or any corresponding section of any future Federal tax code, or shall be distributed to the Federal Government, or to a State or local government, for a public purpose. Any such assets not so disposed of shall be disposed of by a Court of Competent Jurisdiction of the county in which the principal office of the Corporation is then located, exclusively for such purposes or to such organization or organizations, as said Court shall determine, which are organized and operated exclusively for such purposes.

Previous Action:

(e.g.) N/A

Original Justification:

Membership levels are reported each year in the NCWM Board of Directors Interim Meeting Report. Reports going back to 2015 are available on the NCWM website. Since 2007, the lowest membership level was recorded in 2013 (2,116 members). The highest was 2549 in 2008. The average (2007 to 2019) was 2,267.

The current NCWM Strategic Plan has an overarching goal to grow membership to 5,000 by 2025.

The submitter requested that this item be given Voting status in 2021.

Arguments in Favor:

Regulatory:

- This proposal was to correct what the submitter thought was an outdated minimum membership level for dissolution.

Industry:

- None

Advisory:

- None

Arguments Against:

Regulatory:

- None

Industry:

- None

Advisory:

- None

Item Development:

At the 2021 NCWM Annual Meeting, this proposal was submitted based on an assumption that membership levels are higher than when the bylaws were drafted and adopted in 1997. The Board has responded that membership numbers have fallen short of 1997 levels because of the recessions following the September 11, 2001, attacks, the 2008-2009 recession, and now the recession caused by the 2020 pandemic. NCWM had 3,284 members in June 1997, compared to 2,417 members in June 2020. While the Board appreciates the intent of the proposal, it did not see adequate justification for the change. The item remained Informational and was withdrawn at the submitter's request at the 106th NCWM Annual Meeting.

SPB-21.2 A Bylaws, Article IX – Committees

Source:

California Division of Measurement Standards

Purpose:

Clarity and consistency in Article IX of the NCWM Bylaws.

Item Under Consideration:

Amend NCWM Bylaws as follows:

Article II - Committees

...

Section 5 - Duties and Fields of Operation of Board of Directors and Committees

...

H. NTEP Committee

The NTEP Committee annually reports on its activities and makes recommendations to the Board of Directors. Its scope embraces all matters dealing with:

1. NTEP process (application, evaluation, certification, maintenance of certificate)
2. Participating Laboratories and Evaluators
3. NTEP sectors/workgroups
4. VCAP
5. International recognition (OIML, Measurement Canada)

Previous Action:

(e.g.) N/A

Original Justification:

This proposal is to make consistent the formatting and reporting requirements in Article IX.

Article IX, Sections 1 – 4 includes all committees [standing (L&R, S&T, PDC), nominating, finance, credentials, AMC, and NTEP]. In Section 5, all committees have reporting requirements except the NTEP Committee.

The submitter requested that this item be given Voting status in 2021.

Arguments in Favor:

Regulatory:

- This would make the bylaws more consistent. It looked like there was an omission of the NTEP Committee so this would create consistency in formatting.

Industry:

- None

Advisory:

- None

Arguments Against:

Regulatory:

- None

Industry:

- None

Advisory:

- None

Item Development:

At the 2021 NCWM Annual Meeting, the Board of Directors sees merit in the proposal and has assigned it to the Bylaw Review Task Group for further development. The Task Group will meet prior to the 2022 Interim Meeting to discuss and recommend any necessary changes.

SPB-21.3 D Bylaws, Article X – Voting System

Source:

California Division of Measurement Standards

Purpose:

Clarity of terminology in NCWM Bylaws.

Item Under Consideration:

Amend NCWM Bylaws as follows:

Article III - Voting System

...

Section 9A – Voting – Technical Issues

Only members of the House of Delegates and the House of State Representatives will vote on the technical ~~issues~~ questions before the Corporation. **Technical issues include, but are not limited to, those relating to agenda items and reports of the standing and NTEP committees, ad hoc committees, subcommittees, task forces, and study groups.** At the conclusion of debate (if authorized) on a motion, there shall be a call for the vote by voice vote, a show of hands, standing, or electronic count. The requirements for minimum votes in a house are found in Article X, Section 4.

...

Section 9B – Voting – Business Issues

All members of the Corporation, including Associate Members, will vote on all business issues before the Corporation. **Business issues include, but are not limited to, the administrative functions of the Corporation such as those relating to the nominations, finance, and credentials committees, and on proposed operational**

alterations such as shifts of corporate aims and goals or fundamental structural changes. At the conclusion of debate (if authorized) on a motion, there shall be a call for the vote by voice vote. In the event that a voice vote is too close to be determined in the opinion of the Chairman, there shall be a show of hands, standing vote, or machine (electronic) vote count. There is no minimum voting requirement for any house for business issues.

Previous Action:

(e.g.) N/A

Original Justification:

In Article X – Voting System, a distinction is made between business issues and technical issues. The second paragraph of Article X, states, “**The NCWM Board of Directors shall determine whether an issue is technical or business in accordance with the policies and procedures of the Corporation.**” There does not appear to be an NCWM policy as described in Article X that plainly states which issues are technical or business, or the process used by the Board of Directors its determination.

If implemented, the sweeping changes proposed in the 2019 NCWM Strategic Plan would financially impact all categories of NCWM members. In the July 11, 2019, NCWM letter to Dr. Douglas Olson (NIST OWM) Item #6 would force numerous state weights and measures jurisdictions to undertake lengthy and expensive changes to laws, regulations, policies, administrative manuals, and public-facing materials, e.g., web content, applications, FAQs, etc. During this time there could also be an interruption of regulatory oversight, which would lead to increased consumer fraud, an uneven playing field for businesses, and spike in unfair business practices. NCWM members entrust their Board of Directors to make the right decisions, but there need to be checks and balances to ensure the Board of Directors does not govern as an oligarchy.

If the NCWM Board of Directors does not want to define the terms business issue and technical issue in its bylaws, a new policy should be created and placed in either Section 1. Administration or Section 2. Meetings. This new policy should state how the NCWM Board of Directors determines whether an issue is business or technical in nature, including a complex issue that may have components of both.

The submitter requested that this item be given Voting status in 2021.

Arguments in Favor:

Regulatory:

- The proposal should define Technical Items as related to the handbooks and define all other issues as Business Items.
- If NCWM copyrights its standards, it could have a negative effect on states that reference NIST Handbooks. This proposal was brought forward to make that decision a Business Item for a vote of the General Membership. If the distribution of the handbooks is too controlled, it could be a huge financial consequence to membership.
- Opening the state law to reference NCWM Handbooks is a dangerous endeavor.

Industry:

- None

Advisory:

- Section 9A only applies to technical items before the corporation. They are only before the corporation if presented by a standing committee.

Arguments Against:

Regulatory:

- It is unclear whether the voting system would apply only to the voting session of the NCWM Annual Meetings or would extend to the Committees and subgroups as well.
- If the definition of Business Items is too broad, it could hamper the Board from making any decisions without bringing them before the membership. It could create gridlock.

Industry:

- None

Advisory:

- None

Item Development:

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Ms. Kristin Macey
California Division of Measurement Standards
Phone: (916) 229-3000
Email: kristin.macey@cdfa.ca.gov

The Board of Directors had a lengthy discussion regarding this item. The Board is uncertain that the proposed definitions add clarity and is consequently returning the item to the submitter for further development. Specifically: 1) the added sentences define technical and business items, but the phrase “not limited to” is ambiguous and would likely cause confusion and at the very least leaves room for arbitrary interpretation. 2) The Board of Directors believes these changes would have unintended negative consequences including the role of the Board of Directors versus the role of the member body.

The Board believes the purpose of the bylaws is to define the process for voting on technical versus business items. Policy may be a better avenue to guide the Board in its decision-making process. The effort is to define what items should fall within the decision process of the Board and what items should be decided by the membership of the association.

At the 2021 NCWM Annual Meeting, the submitter reported that they are continuing to develop this proposal.

SPB-21.4 V Article II – Mission, Article VI – Directors and Appointive Officers, Article VII – Duties of Director and Appointive Officials, Article X – Voting System

(This item was adopted.)

Source:

Bylaw Review Task Group

Purpose:

The Board of Directors may declare an emergency prior to an interim or annual meeting allowing all the meeting to be held electronically or for some to attend in-person and some to attend electronically. The rules below are established to ensure smooth operation of the meeting while allowing all participants an opportunity to fully participate in the presentations, discussions, and decisions as allowed at the normal in-person meeting.

Item Under Consideration:

Article II - Mission

Section 1 - Mission

~~The mission of the National Conference on Weights and Measures, Inc. is to advance a healthy business and consumer climate through the development and implementation of uniform and equitable weights and measures standards using a consensus building process.~~

The mission of the National Conference on Weights and Measures, Inc. is to ensure equity through uniform standards in a changing marketplace. NCWM develops uniform and equitable weights and measures standards to:

- Promote commerce and fair competition by leveling the playing field.
- Ensure consumers “get what they pay for”, and
- Foster confidence in marketplace transactions.

Article VI - Directors and Appointive Officials

...

Section 2 - Directors Eligibility

- ~~A. Any active member in good standing shall be eligible to hold the office of Chairman, Chairman-Elect, Past Chairman, Treasurer, and Active Director, provided that the individual meets the other requirements set forth in the Bylaws. Further, any Associate member is eligible to hold office as the Associate Director and any Active, Advisory, or Associate member is eligible to hold office as an at-large Director.~~
- ~~B. The Chairman-Elect will be elected at the Annual Meeting one year prior to the term of service as Corporation Chairman. After serving one year as Chairman-Elect, the incumbent will succeed to the office of Corporation Chairman.~~

...

Section 3 - Nominations and Elections

...

D. Terms of Office

1. The Chairman, Chairman-Elect and Past Chairman shall serve for a term of 1 year. ~~or until their successors are respectively elected or appointed and qualified.~~ The Chairman-Elect will be elected at the Annual Meeting one year prior to the term of service as Corporation Chairman. After serving one year as Chairman-Elect, the incumbent will succeed to the office of Corporation Chairman. The consecutive reelection of a Chairman and Chairman-Elect is prohibited; however, the eight other directors may be re-elected. The eight other directors shall serve for 5-year terms; except for the Associate Director and Treasurer, who shall serve a 3-year term. Elections shall take place at such intervals as are necessary to retain an 11-member Board at all times, except that vacancies shall be filled under Section 3, paragraph E, below.
2. All Directors shall take office immediately following the close of the Annual Meeting at which they were elected.
3. Should the Chairman-Elect for any reason be unable or unwilling to be installed as Chairman, his/her successor shall be elected by the Board of Directors. In this event, the newly elected Chairman-Elect shall be installed as Chairman.

E. Filling Vacancies

A vacancy is created if an individual is unable or unwilling to complete their term, is removed for cause, or if timely elections cannot be held for any reason. In case of a vacancy in any of the elective offices, the Chairman (or, if the vacancy is for the Chairman's position, the immediate Past-Chairman) shall nominate a replacement, and that person shall be appointed to fill the office if a majority of the members of the Board approve the nomination. **The new appointee shall take office immediately following the vote of the board and serve the remainder of the term to which they were appointed.**

Article VII - Duties of the Directors and Appointive Officials

Section 1 - Board of Directors

The Board of Directors is the governing body of the Corporation and is authorized to make all decisions relating thereto, including but not limited to the following:

1. conducts the business of the National Conference on Weights and Measures, Inc., as a Corporation, which at a minimum includes (a) overseeing the preparation and filing of the biennial report and fee with the Nebraska Secretary of State in compliance with Neb. Rev. Stat. Section 21-301.
2. reviews and approves the budget;
3. selects the place and dates for each meeting of the Corporation;
4. fixes all fees including but not limited to meeting registrations, fees associated with NTEP administration, publications, and the annual membership fee;
5. advises the responsible individual or organization, as designated by the Chairman, with respect to the programs for the meetings of the Corporation and its committees, and makes recommendations to the Corporation, the Corporation officers, and the committee chairmen;
6. reviews an annual audit report prepared by an external auditor whose services are retained by the corporation to assess the accuracy of the financial statements, the accounting principles used, and evaluate overall financial statement presentation; and
7. establishes and periodically reviews the policies and procedures for the corporation.

The Board of Directors, in the interval between meetings of the Corporation:

1. authorizes meetings of Corporation committees in accordance with the provisions of Article VIII, Section 3,
2. authorizes expenditures that are not in the budget, and
3. acts for the Corporation in all routine or emergency situations that may arise.

~~Special meetings of the Board may be held at the discretion of the Chairman, and may take place in any manner technologically possible, including, but not limited to, telephone conference calls and electronic mail. A quorum shall consist of 7 members of the Board. Voting may be cast in any manner prescribed by the Chairman. All questions before the Board of Directors will be decided whenever practical, by voice vote or by ballot, and will be decided on the basis of the majority of votes cast.~~

The Board serves as a policy and coordinating body in matters of national and international significance which may include such areas as metrication; the interaction with organizations such as the International Organization of Legal Metrology (OIML), American National Standards Institute (ANSI), International Organization for Standardization (ISO), ASTM International, ~~National Conference of Standards Laboratories~~ (NCSL International), and such internal matters as may be required

Section 2 - Chairman

The Corporation Chairman has broad authority including, but not limited to, the authority to make policy decisions on behalf of the Corporation and take such actions as are necessary to put these decisions into effect. The Chairman is the principal presiding officer at the meetings of the Corporation and of the Board of Directors,

makes appointments to the several standing and special purpose committees, and appoints other Corporation officials to serve during his or her term of office. All appointments are made from among the NCWM Membership. The Chairman, on behalf of the Board, annually presents a report on Corporation activities.

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Section 3 - Parliamentarian

The Parliamentarian shall assist in assuring meetings of the Corporation are conducted in a proper manner. ~~The rules contained in Robert's Rules of Order shall govern the Corporation in all cases to which they are applicable, and in which they are not inconsistent with these Bylaws.~~

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Article VIII - Meetings of the Corporation

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Section 3 - Type of meetings

The annual and interim meetings shall be in-person meetings, excepted only in the event that an emergency is declared by the Board of Directors to allow either meeting to be held entirely or in-part by internet meeting services. Justification and classification of the emergency declaration are at the discretion of the Board and may include, but are not limited to, a pandemic that prevents a significant number of members from participating in an in-person meeting. Such emergency declarations and related determinations to allow internet meetings shall not, however, be uniquely applied to, or employed regarding, any individual agenda item or any subset of items within a complete meeting agenda. The Board of Directors shall maintain policies for conducting these meetings following the principles of the in-person meetings as closely as possible.

Section 34 – Special-Other Meetings of the Board of Directors, Committees and Subgroups within the Corporation

- A. The Corporation Chairman is authorized to order a meeting of the Board of Directors at any time such a session is deemed by the Chairman to be in the best interests of the Corporation. Such meeting may, at the discretion of the Chairman, take place in any manner technologically possible, including, but not limited to, telephone conference call, web meeting and ~~electronic~~ email. A quorum shall consist of 7 members of the Board. Voting may be cast in any manner prescribed by the Chairman. All questions before the Board of Directors will be decided whenever practical, by voice vote or by ballot, and will be decided on the basis of the majority of votes cast.
- B. Other Committees and subgroups of the Corporation are authorized to hold meetings at times other than the Annual Meeting or Interim Meeting by any manner technologically possible, including, but not limited to telephone conference call, web meeting and email. If a committee or subgroup desires to conduct a meeting requiring travel and facilities at the expense of the corporation, such meeting will be subject to approval in advance by the Board of Directors. ~~provided that:~~
 - ~~1. such meeting or meetings have been provided for in the Corporation budget approved by the Board of Directors, or~~
 - ~~2. such meeting or meetings are approved by the Board of Directors in cases where funding is required.~~

Section 45 - Rules of Order

The rules contained in the latest edition of Robert's Rules of Order Newly Revised shall govern the Corporation in all cases to which they are applicable, and in which they are not inconsistent with these Bylaws

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Article X - Voting System

...

Section 5 - Voting Rules

A. Quorum

A quorum shall consist of 27 eligible voting members in the House of State Representatives.

B. Proxy Votes

Proxy votes are not permitted. Since issues and recommendations in the committees' interim reports are often modified and amended at the NCWM Annual Meeting, the attendance of officials at the Annual Meeting and voting sessions is vital.

C. Method

For voting on business issues relating to NCWM, Inc., as a Corporation, all voting is by a voice vote of the members eligible to vote. Eligible members may vote virtually if the meeting is held entirely or in part electronically in accordance with the terms and intents of Article VIII, Section 3. For voting on the adoption of final reports of committees on technical issues, as well as for voting on all other issues, ~~and in the event that the voice vote is too close to be determined in the opinion of the Chairman,~~ there shall be a voice vote, a show of hands, standing vote, or machine (electronic) vote count. No abstentions are recorded.

D. Timing

Voting by all eligible Houses is simultaneous, or as close to simultaneous as achievable through the voting platform in use. The parliamentarian will announce the results immediately following the vote.

E. Recording

The voting ~~system~~procedures which shall be used, except in the case of a voice vote, ~~are~~is designed to record the vote count of each house, whether ~~an~~by electronic ~~system~~vote, show of hands, or standing vote is used.

F. Applicability

These procedures (rules) apply only to the plenary (general) sessions of the NCWM.

...

Section 8 - Seating Arrangement

The seating arrangement for voting sessions during in-person meetings is as shown in the diagram.

Previous Action:

(e.g.) N/A

Original Justification:

Background: The 2020 global pandemic brought attention to NCWM's need for provisions to conduct business when the Board of Directors deems a significant number of members may not be able to participate at an in-person meeting. The NCWM Chair formed a task group to review bylaws and policies to address the needs of the association in such circumstances. This policy is a product of that effort. It also reflects additional changes identified by the task group as appropriate.

Comments in Favor:**Regulatory:**

- It is important to incorporate provisions in the Bylaws for virtual voting but make it clear that it is tied to declarations of emergency.

Industry:

- The intent is to maintain our way of doing business, not fundamentally change the way we do business, so virtual voting should be limited to declarations of emergency.
- The regional associations should look at their bylaws to see if similar measures are needed.

Advisory:

- None

Comments Against:**Regulatory:**

- Why not allow for virtual voting at all Annual Meetings, eliminating the reference to emergencies?

Industry:

- None

Advisory:

- None

Item Development:

At the 2021 NCWM Interim Meeting, Bylaws Review Task Group member Mr. Chuck Corr (Chuck Corr Consulting) provided a review and explanation for the proposed amendments to the bylaws. The primary purpose was to enable virtual voting when it is not possible to meet in person. The Task Group also identified some areas where the bylaws could be improved unrelated to voting, which are included in the proposals. This was primarily moving sections to more appropriate locations within the bylaws without making substantive changes. The Board made several editorial changes to the proposal which are reflected in the Item under Consideration. Hearing no opposition to the proposal, this item is a Voting item.

At the 2021 NCWM Annual Meeting, Mr. Kurt Floren (Los Angeles County, California) provided recommendations to improve the original proposal. Several other attendees expressed support for his recommendations. The Board accepted the recommendations with additional minor edits. The following proposal is presented for adoption.

During the Board of Directors work session, Dr. Douglas Olson (NIST OWM) recommended, and the Board accepted, a change to Article X, Section 5, Part D, Timing.

SPB-21.5 W Safety Subcommittee**Source:**

Board of Directors

Purpose:

Receive member input on the charge and future of the Safety Subcommittee.

Original Justification:

A Safety Task Group was appointed in 2016 reporting to the Professional Development Committee. It got off to an energetic start under the leadership of its passionate and knowledgeable chair. The Task Group was upgraded to a Subcommittee in 2018 at the request of the Task Group Chair who foresaw an ongoing benefit to membership under

a more permanent structure. A primary work product of the Subcommittee was an Annual Safety Survey of state and local weights and measures programs. The Subcommittee Chair retired in 2019 and the NCWM Chairs since that time have been unsuccessful in their search for a replacement. Consequently, the Subcommittee's work gradually came to a halt.

The Board of Directors requests input from membership regarding the future of the Safety Subcommittee. Should NCWM maintain the Subcommittee? If so, what are the desired outputs of the Subcommittee? If the Subcommittee is to proceed, are there any volunteers to lead the group as Chair?

At the 2021 Annual Meeting, all comments supported retention of the Safety Subcommittee. Chair-Elect Hankins reported that several members expressed interest in participation. The Board withdrew this item, and Mr. Hankins will proceed with appointments as Chair following the Annual Meeting.

FIN – FINANCIAL

FIN-1 I Treasurer's Report

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

NCWM operates on a fiscal year October 1st through September 30th. Budgets are set to be conservative on projected revenues and realistic on anticipated expenses. The Board of Directors continues to monitor its ability to fully implement contingency plans based on potential costs compared to reserve funds. An annual audit was conducted by Dana F. Cole & Company as an outside entity and this provides another layer of accountability. No concerns arose from this annual audit.

The June 30, 2020, balance sheet below provides a comparison with the same time the previous year. Assets are inflated by the Associate Membership Fund. These funds are accumulated through the additional \$15 dues paid by associated members and are spent at the discretion of the Associate Membership Committee in accordance with the Committee Bylaws.

Overall, the NCWM's finances are in good order. This concludes the financial report.

ASSETS	June 30, 2020	June 30, 2019
Current Assets	\$	\$
Checking/Savings		
Associate Member Fund	38,469.15	31,343.58
Certificates of Deposit	1,235,029.60	1,393,252.78
Money Market Fund	116,613.32	0.00
Checking	32,889.98	22,749.73
Savings	76,861.44	162,616.97
Total Checking/Savings	1,499,863.49	1,609,963.06
Accounts Receivable	2,750.78	12,706.45
Other Current Assets	363,117.08	271,343.96
Other Assets	17,789.66	35,148.68
TOTAL ASSETS	1,883,521.01	1,929,162.15
LIABILITIES & EQUITY		
Liabilities		
Current Liabilities	33,814.63	45,533.35
Total Liabilities	33,814.63	45,533.35
Equity		
Designated - Associate Membership	38,459.59	31,343.58
Unrestricted Net Assets	1,598,940.71	1,507,988.11
Net Income	212,306.08	344,297.11
Total Equity	1,849,706.38	1,883,628.80
TOTAL LIABILITIES & EQUITY	1,883,521.01	1,929,162.15

Mr. Craig VanBuren, Michigan | 2020 NCWM Chair
 Mr. Hal Prince, Florida | 2020 NCWM Chair-Elect
 Mr. Stephen Benjamin, North Carolina | NTEP Committee Chair
 Mr. Raymond Johnson, New Mexico | Treasurer
 Mr. Jack Walsh, Town of Wellesley, Massachusetts | Active Membership - Northeastern
 Mr. Ivan Hankins, Iowa | Active Membership - Central
 Mr. Mahesh Albuquerque, Colorado | Active Membership - Western
 Mr. Gene Robertson, Mississippi | Active Membership - Southern
 Ms. Rebecca Richardson, MARC-IV Consulting | At-Large
 Ms. Rachelle Miller, Wisconsin | At-Large
 Mr. Christopher Guay, Procter and Gamble | AMC Representative
 Mr. Don Onwiler, NCWM | Executive Director
 Dr. Douglas Olson, NIST, OWM | Executive Secretary
 Mr. Darrell Flocken, NCWM | NTEP Administrator
 Mr. Carl Cotton, Measurement Canada | Board of Directors Advisor

2020 Board of Directors

The March 31, 2021, balance sheet below provides a comparison with the same time the previous year. Assets are inflated by the Associate Membership Fund. These funds are accumulated through the additional \$15 dues paid by associated members and are spent at the discretion of the Associate Membership Committee in accordance with the Committee Bylaws.

Also, the annual audit was conducted by Dana F. Cole & Company as an outside entity, and this provides another layer of accountability. No concerns arose from this annual audit. Overall, the NCWM's finances are in good order.

ASSETS	March 31, 2021	March 31, 2020
Current Assets	\$	\$
Checking/Savings		
Associate Member Fund	50,522.57	38,039.59
Certificates of Deposit	952,414.08	1,232,372.02
Money Market Fund	1,002.61	203,729.56
Checking	25,042.44	30,658.06
Savings	686,131.66	75,890.43
Total Checking/Savings	1,715,113.36	1,580,689.66
Accounts Receivable	9,599.97	6,984.37
Other Current Assets	298,926.21	341,508.85
Other Assets	13,893.79	14,792.99
TOTAL ASSETS	2,037,533.33	1,943,975.87
LIABILITIES & EQUITY		
Liabilities		
Current Liabilities	32,320.62	33,049.69
Total Liabilities	32,320.62	33,049.69
Equity		
Designated - Associate Membership	50,522.57	38,039.59
Unrestricted Net Assets	1,655,461.17	1,599,360.71
Net Income	299,228.97	273,525.88
Total Equity	2,005,212.71	1,910,926.18
TOTAL LIABILITIES & EQUITY	2,037,533.33	1,943,975.87

Mr. Hal Prince, Florida | 2021 NCWM Chair
Mr. Ivan Hankins, Iowa | 2021 NCWM Chair-Elect
Mr. Craig VanBuren, Michigan | NTEP Committee Chair
Mr. Ray Johnson, New Mexico | Treasurer
Mr. Loren Minnich, Kansas | Active Membership - Central
Mr. Jack Walsh, Town of Wellesley, Massachusetts | Active Membership - Northeastern
Mr. Mahesh Albuquerque, Colorado | Active Membership - Western
Mr. Gene Robertson, Mississippi | Active Membership - Southern
Ms. Rebecca Richardson, MARC-IV Consulting | At-Large
Ms. Rachelle Miller, Wisconsin | At-Large
Mr. Christopher Guay, Associate | AMC Representative
Mr. Don Onwiler, NCWM | Executive Director
Dr. Douglas Olson, NIST, OWM | Executive Secretary
Mr. Darrell Flocken, NCWM | NTEP Administrator
Mr. Carl Cotton, Measurement Canada | Board of Directors Advisor

2021 Board of Directors

Appendix A

Report of the Activities of the International Organization of Legal Metrology (OIML) and Regional Legal Metrology Organizations

National Institute of Standards and Technology (NIST), Office of Weights and Measures (OWM)

INTRODUCTION

The OWM at NIST is responsible for coordinating United States participation in OIML and other international legal metrology organizations. Learn more about OIML at www.oiml.org and about NIST, OWM at www.nist.gov/owm. Dr. Charles Ehrlich, Program Leader of the International Legal Metrology Program, can be contacted at (301) 975-4834 or charles.ehrlich@nist.gov.

Note: OIML publications are available electronically without cost at www.oiml.org.

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Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
ANSI	American National Standards Institute	ISO	International Standardization Organization
APEC	Asia-Pacific Economic Cooperation	IWG	International Work Group
APLMF	Asia-Pacific Legal Metrology Forum	LMWG	Legal Metrology Work Group
APMP	Asia-Pacific Metrology Program	MAA	Mutual Acceptance Agreement
B	Basic Publication	MTL	Manufacturers' Testing Laboratory
BIML	International Bureau of Legal Metrology	NIST	National Institute of Standards and Technology
BIPM	International Bureau of Weights and Measures	NTEP	National Type Evaluation Program
CD	Committee Draft ¹	OIML	International Organization of Legal Metrology
CIML	International Committee of Legal Metrology	OWM	Office of Weights and Measures
CTT	Conformity to Type	PG	Project Group
D	Document	R	Recommendation
DD	Draft Document ²	SC	Technical Subcommittee
DoMC	Declaration of Mutual Confidence	SIM	Inter-American Metrology System
DR	Draft Recommendation ²	TC	Technical Committee
DV	Draft Vocabulary ²	USNWG	U.S. National Work Group
GA	General Assembly	VIM	International Vocabulary of Metrology
IEC	International Electrotechnical Commission	VIML	International Vocabulary of Legal Metrology
IQ Mark	International Quantity Mark	WD	Working Draft ³
¹ CD: a committee draft at the stage of development within a technical committee, subcommittee or project group; in this document, successive drafts are numbered 1 CD, 2 CD, etc. ² DD, DR, and DV: a draft document approved at the level of the technical committee, subcommittee or project group concerned and sent to BIML for approval by CIML. ³ WD: working draft that precedes the development of a CD; in this document, successive drafts are number 1 WD, 2 WD, etc.			

Details of All Items
(In order by Reference Key)

I. REPORT ON THE ACTIVITIES OF THE OIML TECHNICAL COMMITTEES

This section reports on recent activities and the status of work in the OIML Technical Committees (TCs), Technical Subcommittees (SCs), and Project Groups (PGs) of specific interest to members of the National Conference on Weights and Measures (NCWM). Schedules of future activities of the TC/SC Secretariats, PG Conveners, the U.S. National Work Groups (USNWGs), and the International Work Groups (IWGs) and Project Groups of the TCs and SCs are also included.

TC 3/SC 5 Conformity Assessment (United States)

Please see the section on the OIML Certification System (OIML-CS), found at the end of this Section of Appendix A.

TC 5/SC 1 Environmental Conditions (Netherlands)

OIML D 11 *General requirements for measuring instruments - Environmental conditions* is a very important document in the OIML system and is used by all of the OIML TCs as a general reference for technical and testing requirements on all measuring instruments. Highlights of the most recent revision cycle include: expanding the terminology section, updating several testing sections to reflect the latest International Electrotechnical Commission (IEC) reference standards, and including a new environmental class (“E3”) for a non-mains local source of electrical power supply. Please contact Mr. Ralph Richter at (301) 975-3997 or ralph.richter@nist.gov, if you would like additional information on TC5/SC1 or OIML D 11.

TC 5/SC 2 Software (Germany and BIML)

OIML D 31 *General Requirements for Software-controlled Measuring Instruments* serves as guidance for the software requirements in all of the OIML International Recommendations.

The recent effort to revise D31 is now complete. The Document passed the PG vote on the 2CD in February 2019, passed its CIML Preliminary Ballot in July 2019, and received final CIML approval in October 2019. The revised D31 was published on the OIML website in December 2019. The document now includes methods/means of software verification and improved harmonization of terminology. This includes a subset of terms for “Measurement Result Relevant Information” and “Measurement (Process) Information”; this will distinguish data necessary for legal metrology purposes from data that is necessary for instrument operation but otherwise not legally necessary.

Because some issues in the last revision cycle in OIML D31 were not fully resolved, it was agreed that the document would enter an “immediate revision” following publication. This project has now started, and parties interested in these OIML software efforts should contact Dr. Katya Delak at (301) 975-2520 or katya.delak@nist.gov if they have questions or would like to participate.

TC 6 Prepackaged Products (South Africa)

A new Guide, OIML G 21, entitled “*Guidance for Defining the Requirements for a Certification System for Prepackages*” has been published. This guideline was developed to assist countries in establishing reciprocal agreements to accept the test results on prepackaged goods.

The latest edition of OIML Recommendation R 87 “*Quantity of Product in Prepackages*” (equivalent to NIST Handbook 133 “Checking the Net Contents of Packaged Goods”) was published in 2016. This edition includes a comprehensive overhaul of the statistical requirements and sampling plans. The U.S. and several other countries were successful in opposing efforts by several European Union countries to add drained weight test procedures and packaging requirements utilized in that region to the new edition of R87. Those procedures were rejected primarily because they failed to recognize drained weight test methods that have been in use around the world for decades and

which have been adopted by Codex Alimentarius. A new Project was approved at the CIML meeting in 2019 on “R87 Prepackage Template”.

The latest edition of OIML R 79 *Labeling Requirements for Prepackaged Products* was published in 2015. For more information or to participate in the activities of this committee, please contact Mrs. Tina Butcher at tina.butcher@nist.gov.

TC 7/SC 5 Multi-dimensional Measuring Instruments (Australia)

There is significant interest in maximizing harmonization between OIML R129 “Multi-dimensional Measuring Instruments” and the US requirements for these instruments. The comment period on the 3CD revision of OIML R129 closed in January 2019. Canada became the Co-Convener with Australia on this project and hosted the Project Group’s first meeting in Ottawa in May 2019. Almost all of the international comments received on the 3CD were resolved at the meeting in Ottawa, and the 4CD package of R129 was distributed in December 2019. The comment period on the 4CD revision of OIML R129 closed in March 2020. The Project Group resolved all international comments received on the 4CD through the use of a “minor change procedure” in April 2020 and distributed the R129 Preliminary Online Ballot in May 2020. OIML R129 received final CIML approval in November 2020 and was published in December 2020. Please contact Mr. Ralph Richter at (301) 975-3997 or ralph.richter@nist.gov, if you would like copies of the documents or to participate in this project.

TC 8 Measurement of Quantities of Fluids (Japan)

In June 2019, Japan distributed the First Committee Draft (1CD) of a revision of R 63 *Petroleum Measurement Tables* (1994) now that the corresponding ISO standard has been recently revised. The Secretariat also distributed the 1CD of a revision of R 119 *Pipe Provers for Testing of Measuring Systems for Liquids* in June 2019 -- this document is important for other OIML Recommendations involving liquid measurement. The comments received on the 1CDs have been resolved, and the 2CD packages of both of these documents were distributed in December 2019. Revised documents D 35 *Petroleum Measurement Tables* (previously R 63) and D 36 *Pipe Provers for Testing of Measuring Systems for Liquids* (previously R119) both passed their Preliminary Online Ballot in July 2020, received final CIML approval in November 2020, and were published in December 2020. Please contact Mr. Ralph Richter at (301) 975-3997 or ralph.richter@nist.gov, if you would like copies of any of these documents or to participate in the project to revise R 119.

TC 8/SC 1 Static Volume and Mass Measurement (United States and Netherlands)

The United States and The Netherlands became the new Co-Secretariats of TC 8/SC 1 after Germany announced that it wished to step down as Secretariat. The United States chairs the Project Groups that are revising OIML R 71 *Fixed Storage Tanks* and R 85 *Automatic Level Gages for Measuring the Level of Liquid in Fixed Storage Tanks* to add specific requirements for specialized tanks. The 2CDs of R 71 and R 85 are planned to be distributed for project group vote and comment in 2020 – 2021. The Subcommittee has discussed the importance of revising OIML R 125 *Measuring Systems for the Mass of Liquids in Tanks*, and a new project to revise R 125 has been approved by the CIML. Please contact Mr. Ralph Richter at (301) 975-3997 or ralph.richter@nist.gov, if you would like copies of the documents or to participate in any of these projects.

TC 8/SC 3 Dynamic Volume and Mass Measurement for Liquids Other Than Water (United States and Germany)

OIML R 117 *Dynamic Measuring Systems for Liquids Other Than Water* received final CIML approval in October 2019 and was published in April 2020. This recent project to revise R117 fully harmonized all three parts of the Recommendation and added new annexes for several complete measuring systems, including: (a) measuring systems for the unloading of ships' tanks and for rail and road tankers using an intermediate tank, (b) measuring systems for liquefied gases under pressure (other than LPG dispensers), (c) measuring systems for bunker fuel, and (d) measuring systems for liquefied natural gas (LNG). The 2CD of R 117 was distributed in December 2018 and achieved 100% “yes” votes by the project group. At a March 2019 meeting in Cape Town, South Africa, the project group resolved all 70 pages of international comments received on the 2CD. The PG also developed and approved a 3CD at the meeting, incorporating all of the comment resolutions. The Recommendation passed the CIML Preliminary Ballot in

September 2019. If you have any questions about R117 or the systems that it covers, please contact Mr. Ralph Richter at (301) 975-3997 or ralph.richter@nist.gov.

TC 8/SC 6 Measurement of Cryogenic Liquids (United States)

The Secretariat for OIML R 81, *Dynamic Measuring Devices and Systems for Cryogenic Liquids* has distributed a first committee draft (1CD) of R 81 to Project Group members and the USNWG for their review and comment. These comments have now been resolved, and a 2CD is anticipated to be distributed in 2020 – 2021. To obtain more information or to participate in this project, please contact Mr. Ralph Richter at (301) 975-3997 or ralph.richter@nist.gov.

TC 8/SC 7 Gas Metering (Netherlands)

All three parts of OIML R 137 *Gas Meters* have been published. Extensive United States comments on the 1 CD, the 2 CD, and the DR were developed in cooperation with the measurement committees of the American Gas Association. The OIML R 137 document is especially important to the U.S. interests because the American National Standards Institute (ANSI) B 109 committee on gas measurement is using the published R 137 to create a new performance-based standard for gas meters in the United States. Please contact Mr. Ralph Richter at (301) 975-3997 or ralph.richter@nist.gov, if you would like to participate in these efforts or if you would like to obtain a copy of any of these gas measurement documents.

The Netherlands and Japan served as Co-Conveners on a project to revise OIML R 139, *Compressed gaseous fuel measuring systems for vehicles* that mostly focused on ensuring that the Recommendation fully and accurately includes proper requirements and test procedures for hydrogen fuel dispensers. This standard is important to US stakeholders, especially in the effort to maximize harmonization between domestic and international legal metrology requirements used for the delivery of alternative fuels. The revised Recommendation has been published on the OIML website. To obtain more information on this effort, please contact Mr. Ralph Richter at (301) 975-3997 or ralph.richter@nist.gov.

TC 9 Instruments for Measuring Mass (United States)

OIML R 60 *Metrological Regulation for Load Cells* (Metrological and technical requirements and Metrological controls and performance tests) has been approved and published. was published in 2018. The CIML approved a project to do a minor revision (called an “update”) on R60 in November 2020. This update includes removal of the requirement to include the OIML Certificate Number on each device (if applicable) and is expected to be completed in 2021. For more information on TC 9 activities, please contact Mrs. Tina Butcher at tina.butcher@nist.gov.

TC 9/SC 1 Non-Automatic Weighing Instruments (Germany and France)

A project to revise OIML R 76:2006 *Non-automatic weighing instruments* is in progress. In addition to revising R 76, the project group has been requested to provide suggestions on how to best approach the verification and inspection of these kinds of measuring instruments. The first Project Group meeting was held in Braunschweig, Germany. Several Project Sub-Groups have been tasked with reformatting and updating the Recommendation and with developing field verification and inspection procedures for these measuring instruments. Other Sub-Groups will develop proposals for adding up-to-date software requirements and consider including new test procedures for modules. The second Working Draft (2WD) of R76 was distributed in June 2018. A first Committee Draft (1CD) of the R 76 revision is under development. Please contact Mr. Ralph Richter at (301) 975-4859 or ralph.richter@nist.gov if you are interested in the effort to revise this document.

TC 9/SC 2 Automatic Weighing Instruments (United Kingdom)

A Project Group has been formed to develop a new OIML Recommendation on *Continuous totalizing automatic weighing instruments of the arched chute type*. This type of measuring instrument measures centripetal force on an arched chute. The second committee draft (2CD) of this new document was distributed in December 2018, and the 3CD was distributed to the PG for vote and comment in August 2019. The 3CD passed the PG vote in November 2019, with a significant number of comments. The fourth committee draft (4CD) of this new document passed the PG vote in March 2020, received final CIML approval in November 2020, and was published in April 2021. To

receive copies of the documents concerning this project or to obtain more information on the work of this subcommittee, please contact Mrs. Tina Butcher at tina.butcher@nist.gov.

The Preliminary Ballot of OIML R 61 *Automatic gravimetric filling instruments* received final CIML approval and has been published. At its meeting in October 2018, the CIML approved a new project to revise OIML R 51 *Automatic catch-weighing instruments*, which was last revised in 2006. A 3WD is under development and is expected in spring 2020. Please contact Mrs. Tina Butcher at tina.butcher@nist.gov if you are interested in the project to revise this document.

TC 12 Instruments for measuring electrical quantities (Australia)

OIML R 46 *Active Electrical Energy Meters* is undergoing revision. The United States provided comments on the second working draft (2WD) of R46 that was distributed in February 2019, participated in the Project Group meeting that was held in May 2019 in Helsinki, Finland, and provided comments on the fourth working draft (4WD) of R46 that was distributed in December 2020. The Project Group has established four Subgroups to work on specific issues related to the revision and continuing development of R46: (1) Electric Vehicle (EV) Charging Stations; (2) Fundamental vs. Harmonic power and Reactive Energy; (3) Smart Street Lighting; and (4) Remote Displays and Meters with Modular Components. The next R46 Project Group meeting is scheduled for 18-20 May 2020 in Delft, The Netherlands and the R46 Project Group is holding a series of (virtual) meetings in May 2021. Please contact Dr. Katya Delak at (301) 975-2520 or katya.delak@nist.gov if you have questions about this project or would like to participate.

TC 17/SC 1 Humidity (China and United States)

OIML R 59 *Moisture Meters for Cereal Grains and Oilseeds* received final CIML approval and was published on the OIML website in 2017. Please contact Ms. G. Diane Lee at (301) 975-4405 or diane.lee@nist.gov if you would like more information about this Recommendation.

TC 17/SC 8 Quality Analysis of Agricultural Products (Australia)

The OIML Recommendation *Measuring Instruments for Protein Determination in Grains* was published as OIML R 146 on the OIML website in 2016. Please contact Ms. G. Diane Lee at (301) 975-4405 or diane.lee@nist.gov, if you would like more information on this Recommendation.

OIML Certification System (OIML-CS)

OIML has operated a Certificate System for OIML Type Evaluation of Measuring Instruments since 1991. The OIML Basic Publication B 3:1991 *Certificate System* (revised in 2006 and again in 2011) has underpinned the OIML Basic Certificate System, and OIML B 10:2012 *Mutual Acceptance Arrangement* (MAA) has underpinned the Mutual Acceptance Arrangement of the OIML Certificate System. The MAA provided more rigorous requirements for testing laboratories than the Basic Certificate System did. The categories of measuring instruments that were active under the MAA were load cells (OIML R 60), non-automatic weighing instruments (OIML R 76), and water meters (OIML R 49). NCWM/NTEP has participated in the MAA as a Utilizing Participant for load cells, and from January 2011 to October 2018 issued ninety-four (94) NTEP certificates for load cells under the MAA.

Because of difficulties encountered by the International Bureau of Legal Metrology (BIML) in adequately obtaining and summarizing peer review and/or accreditation data from the MAA test laboratories, and also to promote better awareness of the certificate system, an effort to develop a significantly improved and more robust OIML Certification System (OIML-CS) was started in 2015.

In 2015, OIML formed an Ad-Hoc Working Group (AHWG) on the OIML Certificate System that was tasked to develop a proposal that would significantly change the way that the OIML Certificate System is structured, managed and operated. This proposal included the creation of an OIML Certification System (called OIML-CS) that would be managed by a Management Committee instead of by the BIML. Advisory Committees to the Management Committee were also planned. The AHWG put its proposal forward to the CIML at its meeting in Arachon, France in October 2015, where it was approved. The AHWG was then disbanded, and a new certification system project group (CSPG) was established that prepared a draft of a proposed new framework document (OIML Basic Publication B 18:2016)

establishing the OIML-CS, for voting on at the 2016 CIML Meeting (in Strasbourg, France). Prior to this CIML Meeting, a meeting of the CSPG was held (in Teddington, England) to resolve issues with the framework document, which permitted the framework document to be approved at the 2016 CIML Meeting. Also, approved at the 2016 CIML Meeting was the creation of a Preliminary Management Committee (PrMC), Chaired by Dr. Roman Schwartz. Draft Operational Documents for the OIML-CS were discussed at a meeting of the PrMC in February 2017 in Berlin, Germany. A second meeting of the PrMC was held in Shanghai, China in June 2017, where it was decided that the newly-formed Review Committee (that reviews all applicants to the OIML-CS and makes recommendations to the full Management Committee) would become part of the Management Committee. All of the OIML-CS documents were then approved (including the OIML-CS framework document OIML B 18:2017) at the 2017 CIML Meeting in Cartagena, Colombia.

Implementation of the OIML-CS began in January 2018. Load cells (R 60) and non-automatic weighing instruments (R 76) entered under what is called Scheme A (an advanced level of the OIML-CS where accreditation or peer review is used as the basis for demonstrating compliance with the requirements of the OIML-CS for both OIML Issuing Authorities and Test Laboratories). Several other instrument categories (see the OIML web site, www.oiml.org, for a complete list) entered under Scheme B (an introductory level of the OIML-CS where “self-declaration” is used as the basis for demonstrating compliance with the requirements of the OIML-CS). Thirty-seven (37) instrument categories are completely transitioned from Scheme B to Scheme A as of January 2021 (See the OIML website www.oiml.org/en/oiml-cs/categories for the complete list). Between October 2018 and November 2019 five (5) NTEP certificates for load cells were issued on the basis of test data obtained under the OIML-CS.

At the 2019 CIML meeting Mr. Cock Oosterman (NMI, Netherlands), who was serving as the Management Committee Chairperson, announced that he was leaving that position, and Mr. Bill Loizides (CIML Member from Australia), who had been serving as the Deputy, has temporarily assumed the Chairmanship. Dr. Charles Ehrlich of NIST, and U.S. CIML Member, serves on the Management Committee of the OIML-CS. Mr. Darrell Flocken of NCWM/NTEP serves on the Review Committee, which is now part of the Management Committee. Dr. Ehrlich and Mr. Flocken had planned to attend the 3rd Annual Meeting of the OIML-CS in New Delhi, India, in March 2020, but the meeting was cancelled due to the corona virus epidemic. An online videoconference meeting of the Management Committee has been scheduled for April 2020, and Mr. Flocken and Dr. Ehrlich plan to participate.

In 2020, Mr. Bill Loizides (the CIML Member from Australia), who had been serving as the Deputy Chairperson of the OIML-CS Management Committee, temporarily served as the Chair. Dr. Charles Ehrlich (NIST and the U.S. CIML Member) serves on the Management Committee of the OIML-CS. Mr. Darrell Flocken (NCM/NTEP) serves on the Review Committee, which is now part of the Management Committee. Dr. Ehrlich and Mr. Flocken had planned to attend the 3rd Annual Meeting of the OIML-CS in New Delhi, India, in March 2020, but the meeting was cancelled due to the coronavirus pandemic. Online videoconference meetings of the Management Committee were instead held in May, June, and July 2020. The CIML appointed Mr. Mannie Panesar (UK) as the new OIML-CS MC Chairperson for a term of three years starting in January 2021.

A noteworthy decision of the CIML at its 2020 meeting (see below) was to adopt a ‘remain silent’ approach to whether OIML Certificate Numbers can be included on the nameplates of individual instruments. Use of the OIML logo on the nameplates remains forbidden.

Details and specifics about the OIML Certificate System are available on the OIML website. If there are any questions about the OIML-CS, or for more information, please contact Dr. Ehrlich at (301) 975-4834 or charles.ehrlich@nist.gov.

II. REPORT ON THE 54TH CIML MEETING IN BRATISLAVA, SLOVAK REPUBLIC, IN OCTOBER 2019

The 54th CIML Meeting was held from 22–25 October 2019 in Bratislava, Slovak Republic and was hosted by the Slovak Office of Standards, Metrology and Testing (UNMS). 52 Member States were present or represented together with 11 Corresponding Members, and representatives from organizations in liaison.

The CIML President, Dr. Roman Schwartz (Germany), reported on OIML activities during the last year and presented his vision for the future of the Organization. Dr. Bob Joseph Mathew (Switzerland) was elected as the CIML Second Vice-President for a six-year term.

The new BIML Director, Mr. Anthony Donnellan, reported on the activities and achievements of the Bureau and its staff, including: efforts to improve the effectiveness of OIML technical work and activities, efforts related to Countries and Economies with Emerging Metrology Systems (CEEMS), the OIML Certification System (OIML-CS), World Metrology Day, and work with liaison organizations. Mr. Donnellan also emphasized the cost-saving measures the Bureau has implemented.

The OIML currently has 61 Member States and 61 Corresponding Members and efforts are ongoing to encourage new economies to join the Organization.

The accounts for 2018 were approved and Mr. Donnellan reported that the Organization continues to be in a strong financial position.

The BIML reported on its activities with organizations in liaison. Additionally, Dr. Yukinobu Miki presented a summary of the discussions held during the Regional Legal Metrology Organizations (RLMO) Round Table held earlier in the week. Dr. Martin Milton, the BIPM Director, presented a detailed report on the BIPM's activities over the past year, focusing on the very successful revision of the SI and the BIPM's collaboration with the BIML, most notably World Metrology Day.

Other organizations in liaison (CECIP, IAF, ILAC, OECD and UNIDO) also reported on their activities.

At the meeting, the CIML approved the following publications:

- Revision of D 31 *General requirements for software-controlled measuring instruments*;
- New Document D 33 *Reference standard liquids (Newtonian viscosity standard for the calibration and verification of viscometers)*;
- New Document D 34 *Conformity to Type (CTT) - Pre-market conformity assessment of measuring instruments*;
- Revision of B 6 *Directives for OIML technical work*;
- New Basic Publication B 20 *Rules for the use of OIML logos*;
- New Basic Publication B 21 *Framework for OIML Training Centers and OIML Training Events*; and
- Revision of R 117 *Dynamic measuring systems for liquids other than water*.

Also, at the meeting, the CIML approved the following new projects to be initiated:

- Revision of D 31 *General requirements for software-controlled measuring instruments* (immediate revision);
- New publication: *R 87 prepackage template*;
- Revision of R 142 *Automated refractometers: Methods and means of verification*;
- New publication *Rotary viscometers - Determination of dynamic viscosity - Verification method*; and
- Revision of B 11 *Rules governing the translation, copyright and distribution of OIML Publications*.

The BIML gave a report on the work of high-priority projects and provided a summary of its training program for Project Group conveners. A discussion took place on the OIML Bulletin and the need for more contributions from the Membership in the form of articles.

Mr. Peter Mason, Vice-Chairperson of the CEEMS Advisory Group (AG), delivered a report on the activities of this AG, including the meeting that was held earlier in the week. His report focused on progress related to the 2018 CIML resolution concerning CEEMS. In addition, Mr. Mason provided a report on the outcomes of the e-Learning Workshop that was also held earlier in the week. Following the resignation of Mr. Pu (P.R. China), Mr. Mason was appointed as chairperson of the CEEMS AG, and Dr. Peter Ulbig (Germany) was appointed as vice-chairperson.

Mr. Cock Oosterman, OIML-CS Management Committee (MC) Chairperson reported on the activities of the OIML-CS, including the MC meeting that was held in March 2019. His report highlighted the increased participation in the OIML-CS, promotion and awareness-raising activities, and the key issues that the MC will be addressing in the future.

OIML medals were awarded to Mrs. Lagauterie (France), to Dr. Borzyminski (Poland) and to Dr. Miki (Japan) in recognition of their outstanding contributions to international legal metrology. A Letter of Appreciation was presented to Mr. Oosterman in recognition of his work as OIML-CS MC Chairperson.

The 54th CIML Meeting Resolutions, documents and presentations can be found on the OIML website at: www.oiml.org/en/structure/ciml/sites.

REPORT ON THE 55TH CIML MEETING IN OCTOBER 2020 (HELD ONLINE)

The 16th OIML International Conference and the 55th CIML Meeting were both scheduled to be held in Suzhou (near Shanghai), P.R. China, in October 2020. However, because of the COVID-19 pandemic, it was decided to postpone the Conference until October 2021 and to hold the 55th CIML Meeting as a 3-day online meeting (20-22 Oct 2020).

The Committee decided to utilize the voting rules that apply during “in-meeting” conditions for all decisions that would be made by the Committee during the online CIML meeting. The Committee also approved the use of the secure voting tools on the OIML website for CIML draft resolutions and for secret ballots on appointments.

The OIML currently has 61 Member States and 63 Corresponding Members and efforts are ongoing to encourage new economies to join the Organization.

The CIML President, Dr. Roman Schwartz (Germany), reported on OIML activities during the previous year and also discussed the challenges caused by the pandemic to international legal metrology efforts.

Mr. Anthony Donnellan (BIML Director) reported on the activities and achievements of the Bureau and its staff, including: efforts to improve the effectiveness of OIML technical work and activities, efforts related to Countries and Economies with Emerging Metrology Systems (CEEMS), the OIML Certification System (OIML-CS), World Metrology Day, and work with liaison organizations.

Dr. Schwartz provided a report that supports stronger cooperation between the OIML and the BIPM. The Committee approved the Terms of Reference of a new OIML/BIPM Joint Task Group (JTG) and appointed Dr Roman Schwartz, Dr Charles Ehrlich, and Mr. Anthony Donnellan to serve as the OIML representatives on that JTG.

The CIML held discussions on the following Recommendations during the online meeting; all of these Recommendations received final CIML approval through secure online voting (this online voting actually occurred in November 2020).

- New Recommendation *Non-invasive non-automated sphygmomanometers* (Revision of R 16-1);
- New Recommendation *Non-invasive automated sphygmomanometers* (Revision of R 16-2);

- New Recommendation *Continuous totalizing automatic weighing instruments of the arched chute type*;
- Revision of R 129 *Multi-dimensional measuring instruments*;
- Revision of D 1 *National metrology systems – Developing the institutional and legislative framework*;
- New Document *Petroleum measurement tables* (Revision of R 63); and
- New Document *Pipe provers for testing measuring systems for liquids* (Revision of R 119).

The Committee approved a new project to update OIML R 60:2017 *Metrological regulation for load cells* under the responsibility of the OIML-CS Management Committee and the BIML.

The BIML gave a report on the technical work of the OIML, with an emphasis on high-priority projects and high-priority documents. A discussion took place on the OIML Bulletin and the plan that has been initiated to promote/improve contributions from the Membership in the form of articles for future Bulletins.

A report and update on the OIML Certification System (OIML-CS) was provided by Mr. Bill Loizides (Australia) who has served as Management Committee (MC) Acting Chairperson for the past several months. The report highlighted the increased participation in the OIML-CS, promotion and awareness-raising activities, and the key issues that the MC will be addressing in the future. The CIML appointed Mr. Mannie Panesar (UK) as the new OIML-CS MC Chairperson for a term of three years starting in January 2021. The CIML also re-appointed Mr. Bill Loizides as OIML-CS MC Deputy Chairperson for another three-year term.

Based on a strong effort by the U.S. and following the recommendation of the OIML Certification System Management Committee, the CIML decided that all references to the marking (especially restrictions on marking) of the OIML certificate number on measuring instruments should be removed from all OIML publications. The Committee requested that the OIML-CS MC revise the relevant OIML-CS publications and develop a Guidance Note regarding the meaning of the OIML certificate number when it is marked on a measuring instrument. The BIML was instructed to review all OIML publications to identify those that include a reference to the marking of the OIML certificate number on measuring instruments and select the most appropriate method to amend/revise the relevant publications.

The Advisory Group on matters concerning Countries and Economies with Emerging Metrology Systems (CEEMS AG) was created by the CIML to provide advice to the OIML on any matter relating to CEEMS. Mr. Peter Mason, (Chair of the CEEMS AG) delivered a report on the activities of this AG, including an online meeting of the AG that was held on 06 Oct 2020. His report focused on progress related to the 2018 CIML resolution concerning CEEMS. The CIML expressed their appreciation for the progress made by the Advisory Group, especially the significant effort made by the AG to complete the revision of OIML International Document D 1. The CIML also endorsed a proposal for the Advisory Group to develop a strategy on the application of online technology for capacity building and other CEEMS activities.

The new Chairperson of the Regional Legal Metrology Organization Round Table, Dr. Charles Ehrlich (U.S. and also serves as the CIML 1st VP), provided an update on the activities of the RLMO RT including an online meeting of the RLMO RT that was held on 08 Oct 2020. Significant progress has been made to improve the functioning and the effectiveness of the RLMO RT in 2020. Discussions were held concerning how both the RLMOs and their individual member countries were coping and operating during the coronavirus pandemic. Discussions were also held about further expanding the scope of the RLMO Round Table and improving the collaboration between the RLMOs – such as the sharing of training materials and e-learning modules. Interim meetings of the RLMO RT were held on April 14 and June 23, 2021, mainly for purposes of planning for the annual RLMO RT meeting on 30 September 2021. It is anticipated that ‘smart meters’ will be a focus of that meeting, along with digitalization in legal metrology, which is gaining attention and importance globally.

The following is a list of the six RLMOs that actively participate in the Round Table:

- AFRIMETS (Intra-Africa Metrology System);
- APLMF (Asia-Pacific Legal Metrology Forum);
- COOMET (Euro-Asian Cooperation of National Metrological Institutions);
- GULFMET (Gulf Association for Metrology);
- SIM (The Inter-American Metrology System); and
- WELMEC (European Cooperation in Legal Metrology).

Other organizations in liaison (including the BIPM, CECIP, IAF, ILAC, OECD and UNIDO) submitted reports to the CIML meeting that are available on the OIML website.

An OIML Medal was awarded to Dr Tsuyoshi Matsumoto (Japan) in recognition of his outstanding contributions to OIML and international legal metrology. Letters of Appreciation were presented to Mr. Ralph Richter (U.S.), Dr. Michael Rinker (Germany), and Dr. Peter Ulbig (Germany) for their contributions to the work of the OIML.

The 55th CIML Meeting Resolutions, documents and presentations can be found on the OIML website at: **[online-55ciml.oiml.org/ciml.html](https://55ciml.oiml.org/ciml.html)**.

III. FUTURE OIML MEETINGS

While the People's Republic of China confirmed its invitation to host the 56th CIML Meeting and the 16th International Conference in 2021, it has been decided that both the CIML meeting and the Conference will be held virtually during the week of 18-22 October 2021.

Virtual meetings of the CEEMS AG and RLMO RT will be held September 28 and 30, 2021, respectively.

IV. REGIONAL LEGAL METROLOGY ORGANIZATIONS

A meeting of the Inter-American Metrology System (SIM) General Assembly is organized annually and is the event where delegates from National Metrology Institutes of the Americas meet to discuss important issues. The past two years, the SIM General Assembly was held in Gaithersburg, Maryland at NIST in (September 2018) and in Santa Cruz, Bolivia (September 2019).

The SIM Legal Metrology Working Group (LMWG) held its most recent meeting in Cartagena, Columbia, in conjunction with the 2017 CIML Meeting. Several issues of importance to the SIM countries were discussed, including: recent weights and measures training that participants felt had been successful, how the new OIML-CS certification system would affect the weights and measures programs in each country, and the problems that many programs faced concerning adequate and stable access to resources. The meeting closed with a discussion on the future needs and expectations of each of their countries. Possible next steps and planning for future training and future LMWG communication and meetings were considered. The SIM LMWG elected a new chair in July 2020, Mr. Pedro Pérez Vargas of the Superintendencia de Industria y Comercio in Columbia. Please contact Mr. Ralph Richter at (301) 975-3997 or **ralph.richter@nist.gov** for more information on SIM and the activities of the SIM LMWG.

The 26th Meeting of the Asia-Pacific Legal Metrology Forum (APLMF) was hosted by Vietnam and was held in November 2019. New Zealand assumed the APLMF Secretariat in 2016, and Mr. Stephen O'Brien of New Zealand's Ministry of Business, Innovation & Employment (MBIE) assumed the APLMF Presidency.

A virtual meeting of the Asia-Pacific Legal Metrology Forum (APLMF) was held on December 3-4, 2020. The APLMF Secretariat has now transitioned from New Zealand to Malaysia, with Dr. Osman Zakaria now serving as the APLMF President. The APLMF will again meet on-line in late 2021 (a date has not yet been set).

The main objectives of APLMF are to coordinate regional training courses in legal metrology and to provide a forum for exchange of information among legal metrology authorities. APLMF activities have been facilitated through its seven work groups. A meeting of the APLMF Working Groups (WGs) was held on the day prior to the APLMF meeting. The most active WG has been the Working Group on Training Coordination. Because of the importance of the training mission to APLMF, this WG has now become a permanent part of the APLMF Secretariat (instead of a separate WG). The results of a recent APLMF survey clearly indicated that the more than 20 courses conducted by APLMF in the last 10 years were highly valued by the member economies, promoted harmonization in the Asia-Pacific region, and frequently led to revised/improved legislation and regulations in the member economies.

A significant joint project entitled “Metrology Enabling Developing Economies in Asia” (MEDEA) has been conducted over the past several years by APLMF, the Asia Pacific Metrology Programme (APMP) and the Physikalisch-Technische Bundesanstalt (PTB). This project has been managed by PTB and is primarily funded by Germany. The project aims to foster and further develop the capabilities of the APLMF and the Asia-Pacific Metrology Program (APMP) to support developing economies in the Asia-Pacific region, to promote metrology systems within developing economies, and to strengthen the metrology systems/infrastructure within developing economies.

Please contact Mr. Ralph Richter at (301) 975-3997 or **ralph.richter@nist.gov** for more information on APLMF and the 2020 APLMF Annual Meeting.

Appendix B

Associate Membership Committee (AMC) Draft Meeting Minutes

Mr. Bob Weise, Chair
Northwest Tank
January 28, 2020

Details of All Items

AGENDA

- I. Call to Order**
- II. Approval of Meeting Minutes**
- III. Financial Condition**
- IV. NCWM Industry Representative Reports**
 - (a) Board of Directors Report
 - (b) Professional Development Committee Report
 - (c) Laws and Regulations Committee Report
- V. AMC Fund Disbursement Requests**
- VI. Filling Vacant Positions**
- VII. Old Business**
- VIII. New Business**
- IX. Adjournment**

AMC MEETING MINUTES

I. Call to Order – 7:34 am

II. Minutes approved from previous meeting

Approved – 7:37 am

III. Financial Condition

AMC Account Balance

\$37,620.93

Pending Payments

Toolkit Task Group \$1,660.00

NYS W&M Association \$4,000.00

Nevada: Western RMAP \$1,781.72

Available Funds

\$30,179.21

Approved Financial Condition 7:41 am

IV. NCWM INDUSTRY REPRESENTATIVES REPORTS

a) Board of Directors Report – Mr. Chris Guay

- EV Charging Stations – requirements in Handbook 44 vs. cost of compliance. Proposals in some states would exclude Handbook 44 requirements. NCWM will prepare an educational background article for newsletter and an educational press release.
- OIML Standards: Foreign companies want international access to US market, harmonization.
- New Policy: Committee Work Session Protocol on comments during work sessions – “Committee Chairs may request technical clarification from called upon observers during their work sessions.” This would eliminate “observers raising their hands” and other committee members asking an observer a question.
- Professional Certification Program – Mr. Jerry Buendel has now taken responsibility from Mr. Ross Andersen. Some new topic areas are soon to be released.
- Testing -- challenge for states wanting to administer testing, but work is underway to work through issues. Some testing centers may charge a fee, especially for private sector employees.
- Basic competency exams are a challenge for RSA (private sector service providers) employees and new state inspectors to pass since the test content can be broader than their technical niche or specialty.
- Accreditation of Professional Certification Program -- Signed agreement with accreditation agency to start to evaluate the accreditation process – they are conducting due diligence gap analysis to determine possible process/cost. Question is whether each test category will be a separate accreditation and cost of getting and maintaining accreditation.
- Board asking question whether FALS should be made a standing committee independent of L&R. Plan is to look at ways to ensure FALS works for all stakeholders.
- Strategic Plan – Board has last meeting with facilitator in November, will be discussing with members at

this meeting. Looking for input.

b) PDC – Mr. Jim Pettinato

- Looking for Safety Liaison

c) L&R

No Update

REGIONAL SUMMARIES

Central Update:

Nothing to report

Northeast Update:

Nothing to report

Southern Update:

Nothing to report

Western Update:

Nothing to report

OTHER ORGANIZATIONS

NIST:

Nothing to report

OIML:

Nothing to report

Canada:

Nothing to report

MEMBERSHIP:

Nothing to report

FUTURE NCWM MEETINGS

7/12 – 7/16/2020	Annual Meeting Tacoma, Washington
1/10 – 1/13/2021	Interim Meeting St. Pete Beach, Florida
7/18 – 7/22/2021	Annual Meeting Rochester, New York

AMC POSITION

Secretary/Treasurer

V. AMC FUND DISBURSEMENT REQUESTS

- None at the time of meeting.
- New Request on 2/10/20 for New Jersey Weights and Measures to travel to Mettler Toledo facility. \$750.00

VI. FILLING VACANT POSITIONS

None

VII. OLD BUSINESS

None

VIII. NEW BUSINESS

- Mr. Bob Wiese brought up the Hawaiian metrology lab's metrologist had a medical event. He was wondering if there was a precedent for NCWM or committees providing some form of condolence. Mr. Chris Guay to bring up to Board.

IX. ADJOURNMENT

At 8:09 am

Respectfully submitted by,

Mr. Ron Gibson Vice Chair

MEMBERS

Bob Weise	2020
Ron Gibson	2020
Mark Flint	2020
Christopher Guay	2020
Robert Murnane	2023
Prentis Searles	2022
David Calix	2023

THE FOLLOWING INDIVIDUALS WERE IN ATTENDANCE:

Name	Representing
Mr. Bob Wiese	Northwest Tank
Mr. Ron Gibson	Seraphin
Mr. Jim Pettinato	TechnipFMC
Mr. Brad Fryburger	Southern II Scale
Mr. Richard Suiter	Richard Suiter Consulting
Mr. Bill Callaway	Crompco
Mr. Russ Vires	Mettler Toledo
Mr. Chris Guay	Proctor and Gamble
Mr. Brent Price	Gilbarco

Appendix C

Stakeholder Input for the Strategic Plan

LBL Strategies is a consulting firm that guided the Board of Directors through the Strategic Planning process. A first step in planning is an Environmental Scan. LBL surveyed a variety of members and conducted phone interviews to gather input that would assist the Board in identifying priorities when developing the new plan. The following is a consolidation of the comments received.

- Concern for adequate support for state and local programs
- NCWM and regulators need to keep pace with marketplace disrupters, new technology and innovation
- Use those changes and innovation as opportunities for increased outreach and involvement to strengthen NCWM and its ability to develop standards more efficiently
- NTEP is growing with the new technologies and innovations and needs to continue focus on expanding the program
- We need better public awareness of NCWM as a standards organization and the importance of W&M inspection programs
- Consumers are valuing convenience over accuracy. NCWM needs to adapt to cultural changes to remain relevant.
- NCWM and the W&M community have difficulty drawing young and knowledgeable people as elders retire.
- Politics can get in the way of proper standards.
- NCWM needs to think more globally and be recognized as a leader and resource for industry and government rather than maintain status quo.
- NIST provides support for NCWM but seems to dominate and control the processes and standards. NCWM needs to consider how to grow outside of the NIST shadow.
- NCWM staff are good, though additional staffing and expertise may be needed and the office location may be a factor in visibility.
- NCWM has an opportunity to help agencies maintain well-trained staff to address new technologies and trends.
- Concern for lack of uniformity among the states.
- NCWM needs to think outside the box and take advantage of a changing world and work more closely with the international community.
- NCWM needs to consider international standards but maintain control of U.S. standards.
- NCWM is the place to go when there is inequity in the marketplace.
- NCWM provides learning and growth.
- The standards and NTEP are very important.
- NCWM provides a fair and open standards process.

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Appendix C – Stakeholder Input for the Strategic Plan

- Volunteer regulators and industry are key to success.
- Professional certifications provide a source of pride.
- NTEP is solid but should look to expand.
- NCWM has made recent efforts to improve its processes and needs to continue that effort.
- NCWM creates the standards, but state laws reference NIST. This needs to change if NCWM wants to be recognized.
- NCWM needs to develop and nurture relationships with federal agencies, state agencies and other associations to become more relevant to its members.
- NCWM needs to work with federal agencies to resolve conflicting requirements.

Appendix D

NCWM Charter Team Report Team 2

January 2018

INTRODUCTION

The NCWM Charter Team is charged with proposing changes to the operation of the National Conference on Weights and Measures so that standards can be developed and published in a timelier manner. This report proposes two concepts for the future operation of the Conference. The first concept is making improvements and policy changes to the traditional annual meeting and voting cycle. The second concept is voting twice a year. Advances in technology, new products or services and, the need to rapidly publish regulations has generated a demand for speedier code development. The conference and its leadership are constantly striving to improve operations to meet the NCWM mission “To advance a healthy business and consumer climate through the development and implementation of uniform and equitable weights and measures standards using a consensus building process.”

The first charter team, Team One, was launched in November 2015 and charged with examining the current processes of standards development, identifying stakeholders and their respective roles and to explore the operation of other standard setting organizations. They completed their work in July 2016 and presented a report that identified eight issue areas that require practical solutions. Those issue areas are shown on pages 8 and 9 of this report. Team One also proposed the Conference meet and vote twice a year instead of the traditional annual meeting and voting cycle.

A second charter team, Team Two, was launched in July 2017 to develop at least two concepts for consideration by the Board of Directors. The team was made up of some of the same members of the first team and others were added due to attrition. This team began by reviewing the report published in July 2017 and determined that they would propose solutions to the eight issue areas identified by Team One and review the twice a year meeting proposal.

CONCEPT 1 - IMPROVEMENTS AND POLICY CHANGES TO THE CURRENT MODEL

NCWM OPEN HEARING – PRESENTATIONS AND TESTIMONY

NCWM open hearings must be more structured and disciplined to promote effective and efficient consideration of the items before the Conference. This section addresses Conclusion 5 and 6, Report of Team Charter to the Chair National Conference on Weights and Measures July 2016. (See pages 8 and 9 of this report)

Some presentations and testimony during the open hearings take a large amount of time. Committee Chairs regularly approve technical presentations and provide time limits in advance of the open hearing. The presentations are valuable in explaining complex items and generate further testimony and questions. However, the presenters exceed their time limits. In other instances, testimony is extended because the same people come to the mic time after time to provide more information or to rebut a previous speaker. The lengthy hearings reduce the amount of time the Committees have to work on their items during their work sessions. Often Committees work late into the night and miss out on participating in other conference activities.

RECOMMENDATIONS

- Presentations given at NCWM open hearings be strictly limited to ten minutes with no exceptions. We suggest NCWM provide a timer so at least the presenter and committee chair would know how much time remains.
- Adopt a policy that limits the amount of time and the number of times a speaker can testify on an item during open hearings. The team recommends a limit of two trips to the microphone during discussion of an item -

once for initial testimony and once for a follow-up. An exception could be made, at the Chair's discretion, for Committee members to ask additional questions of a speaker.

- Members should be required to wait until all of those that rise to testify have spoken before they can return to the microphone for additional comments.
- Individuals giving presentations be required to submit their presentations at least 24-hours in advance of the hearing.
- Individuals proposing changes to language must be submitted to the Committee in writing before the beginning of open hearings or before the Committee Work Session.

DEVELOPING AND INFORMATIONAL ITEMS – TESTIMONY AND MANAGEMENT

The Committees at times take open testimony on developing and informational items during the hearings. There are occasions when time is spent hearing testimony or presentations on these items. This section addresses Report of Team Charter to the Chairman National Conference on Weights and Measures July 2016, Conclusions 5 and 6. (See pages 8 and 9 of this report.)

RECOMMENDATIONS

- Developing and Informational items be limited to a report from the assigned subgroup and/or submitter as appropriate at the Interim and Annual. The presenter should be limited to 10 minutes with no exceptions.
- Developing and Informational items be reported on only by the assigned subgroup, submitter or submitter's representative at the regional meetings. Regional associations should consider limiting presentations to 15 minutes as a means of informing regional members and as preparation for those attending the NCWM meetings. Reports at the regionals may be filed in writing or heard through teleconference or web meeting.
- All meetings of the subgroups and items being worked be posted on the conference schedule and NCWM web site.
- Promote and encourage task group meetings at the regional conferences. NCWM should support the regionals with teleconferencing and web meetings to enable this activity.
- The NCWM Board of Directors develop an "Assigned" status for items. Items assigned could be managed under different time limits and process rules to promote rigorous discussion and well-developed items.
- Developing items not acted on by a task group or submitter for one full NCWM annual meeting cycle be withdrawn from the agenda.

PUBLICATION 15 and 16 FORMAT – GROUPING SIMILAR ITEMS

Currently items are placed in Publication 15 and 16 on the Specification and Tolerance Committee and the Laws and Regulation Committee agendas in a manner that aligns the items with the respective sections of the *NIST Handbooks*. This often separates items addressing similar or related topics and the items may be interdependent. Over the past few years the committees batched the items during the open hearings and voting sessions to effectively present the issues to the members and to make the hearing and voting process more efficient. The batching efforts are successful to some extent however members have a difficult time paging through the publications and keeping up with the testimony during the hearings and voting sessions. The charter team discussed grouping similar items in Publication 15 and 16 in a more logical manner and NEWMA successfully used a grouping scheme during their interim meeting with success.

The NCWM Board of Directors considered changing the format of Publication 15 and 16 to incorporate this recommendation and agreed to implement it on a trial basis for the 2018 edition of Publication 15. The board expects that there will be comments and suggestions to improve on the first version of this new format. This new format should also provide benefit to the regional associations as well as the NIST technical advisors.

The Charter Team recommends that NCWM consult with the five active committee members when formatting new proposals to determine whether they should be grouped. Submitters of new proposals may also recommend that their items be grouped.

ITEMS NOT PASSED DURING ANNUAL VOTING SESSION – ELIMINATION AND RECONSIDERATION

Currently voting items that are not passed during the annual meeting voting session are automatically returned to the committee for consideration. These items take time and effort to process.

The charter team concluded that there should be a policy that requires the item be dropped from the agenda with some exceptions. This section addresses Report of Team Charter to the Chair National Conference on Weights and Measures July 2016, Conclusions 1 and 2. (See pages 8 and 9 of this report)

RECOMMENDATIONS

- Items that do not receive the required votes to pass or fail drop off the agenda at the conclusion of the meeting. However, the Committee may choose to carry the item forward if a majority of the Committee voted to carry the item forward. The Committee would be required to make a decision on carrying the item forward within one week of the voting session and communicate their decision to the membership via NCWM. The committee would be made up of the same committee members that considered the item during the voting session. Comments would be added to the Background/Discussion section to report the decision and explain the rationale for carrying the item forward.
- Items carried forward after the annual voting session be limited to consideration for only one more year.
- Items not carried forward after a voting session may be resubmitted for consideration.

Note: These recommendations would require reconsideration if NCWM implements voting twice per year.

JOINT COMMITTEE SESSIONS – RESTRUCTURE AND REPURPOSE

The Committee discussed the value of the Joint Committee Session held at the beginning of the Interim and Annual meetings. The session is intended to be a time to gather the standing committees, identify problems or special situations and make adjustments to help the Committees do their work through the week. Over the past few years this session has become a quick check in and usually there is nothing to report or discuss.

The charter team recommended that this session be restructured to assist Committee members by presenting some refresher training and proactively addressing problems or controversial issues. This section addresses Report of Team Charter to the Chair National Conference on Weights and Measures July 2016, Conclusion 5. (See pages 8 and 9 of this report)

RECOMMENDATIONS

- The Charter Team recommends the session be restructured and the time used for a number of other value-added activities. For example, a quick refresher on Committee process and policies, leadership and facilitation, discussion of batching items, or coordinating joint hearings. Immediate topics could include guidance on using the timer, limiting presentations and how to proceed once time expires.

- The Charter Team recommends that the Fall Committee Development sessions be continued to reflect changes to committee operations and to emphasize the leadership roles of the Chairpersons. The team also recommends expanding the meeting to include all committee members, not just new members and the chairs.
- Standing Committees routinely conduct business prior to the Interim and Annual meetings. Using web-based meetings, teleconferences and other electronic means to discuss and develop items in advance of the conferences. This will be a cultural shift for some members, will require technical assistance from NCWM and will require additional time commitments of Committee Members.

SUBGROUPS SUPPORTING THE WORK OF THE ORGANIZATION – CONTINUOUS IMPROVEMENT

Subgroups are increasingly valuable to the success of the conference as issues require more subject matter expertise, have significant regulatory and economic impact and may require several years to fully develop. The increasing use of subgroups enables the conference to tap industry and government expertise, intensely focus on fully developing issues and keep pace with changes in the marketplace. Subgroups increase membership and participation in the conference but also place an increasing burden on key leaders and NIST staff.

The Charter Team recommends the Conference work diligently to continuously improve subgroup operations. This section addresses Report of Team Charter to the Chair National Conference on Weights and Measures July 2016, Conclusions 4 and 7. (See pages 8 and 9 of this report)

RECOMMENDATIONS

- Each subgroup be given a charter to guide their work. The charter must include who the team reports to, clear expectations about deliverables, available resources, deadlines and a termination date.
- Subgroup members receive training on the policies, structure, reporting relationships, leadership and facilitation. (This is addressed in NCWM Policy 1.5.1. Subgroups Supporting the Work of the Organization.)
- NCWM support subgroups by providing training, and making available conference calls, web meetings, and other electronic communications and document sharing.

REGIONAL STANDING COMMITTEES – ADDING MORE VALUE

The Charter Team recognized the importance of having strong, productive Regional Committees. The regional organizations add value by both evaluating items and further developing the items. Subject matter experts and regulatory officials come together in an environment that enables greater in-depth discussions and thorough analysis of items.

Committees look at each item and recommend a status to the regional membership. The Regional Association then deliberates and approves the Committee's recommendations of Informational, Developing, Voting or Withdrawn.

The other critical function of the Committees is to further develop and refine items into a final product - usually Handbook language. The items then pass onto the other regions for more discussion, development and recommendations on the status for the item.

The Charter Team noted that there are the inconsistencies between the regions and the products they produce. Some of the observations of the Charter Team were:

- Some members are not familiar with the goals, purpose and responsibilities of the Regional Committees.
- Some members do not understand NCWM Committee, hearing and voting processes.

- Some members have not had a chance to develop the skills to chair and facilitate a Committee before being put in that role.
- The Committees may not have a subject matter expert or access to an expert to help make informed decisions and recommendations.
- Some regional committees continue to take testimony and change proposals during their work sessions.
- Some regions are thorough and diligent in working items and others are less so.
- Some regional meetings are well attended by a wide range of regulatory and industry members while others aren't.
- In some cases, submitters of items do not attend the regional or send written testimony to the committees. In those instances, the committees do not have any new information to act on.

This section addresses Report of Team Charter to the Chair National Conference on Weights and Measures July 2016, Conclusion 8. (See pages 8 and 9 of this report)

RECOMMENDATIONS

- Regional Committee members may benefit from training similar to the training provided NCWM Committee members.
- Regions may benefit from a committee training and guideline publication similar to the one provided NCWM committee members. The Western Weights and Measures Association is updating the committee manual they use and is willing to make the manual available to the other associations.
- Regions may make it a priority to have committee members serve for several years, select members to get a committee with a wide range of expertise and include a member from the NCWM Standing Committee to provide continuity and background knowledge that would be useful to both the Regional and National Committees.
- Regional Committees could indicate in their committee reports when they do not have subject matter experts available to assist them in making a recommendation. In these instances, the region may simply take no position.
- New proposals are normally submitted for the fall round of regional meetings. Presuming an Annual Meeting voting is retained, a deadline of September 1 or two weeks prior to the first Regional meeting could be established that would apply to all four regions. This would place all four regions on an even footing to evaluate and make recommendations on the new proposals. Submitters of new proposals would have time from the end of the Interim Meeting to the established deadline date to fully prepare the new proposals. Regional committees, submitters, and NCWM Standing Committee members would then have sufficient time to review and prepare new proposals for the fall meetings.
- Individuals giving presentations could be required to submit their presentations at least 24 hours in advance of the hearing.
- Individuals proposing changes to language could be required to submit them to the Committee in writing before the beginning of open hearings or before the Committee work session. This would allow Regional Committee Chairs to better prepare for their open hearings and work sessions.
- Regional Standing Committees could be encouraged to follow the guidelines for presentations and open hearing comments used by the NCWM Standing Committees to facilitate the open hearing process.

PROPOSALS – FORM 15 DEVELOPMENT AND REGIONAL CONFERENCES

Form 15s are the first step in proposing changes to the handbooks and the process of amending the NIST Handbooks begins with consideration by the Regional Conferences. The Form 15s, known as proposals, come from a variety of sources. Some are submitted by long time members of the conference that have a sound understanding of the process; others are submitted by businesses and regulatory officials new to the conference with little knowledge of the process. The proposals are sometimes very well developed with supporting data, detailed amendments for the affected Handbook sections and, sometimes demonstrate collaboration with other stakeholders. Proposals are generally submitted in a timely manner however some are late, and some are sent directly to regional committee chairs. Because the regions meet in different months the proposal may not be considered by one or more of the regions and in some cases not evaluated by key stakeholders. The Charter Team recommends the Conference take measures to improve the quality and timely submission of Form 15s.

RECOMMENDATIONS

- Develop minimum criteria that each form 15 meet before it can be forwarded to the regional conferences for consideration. The criteria could be in the form of a checklist and should include a description of the regulatory issue, technical details and supporting data, proposed Handbook language, a discussion of economic impact or a cost/benefit analysis, a list of affected stakeholders or industries and a summary of the stakeholder responses to the proposed change.
- Form 15s must be received by September 1 of each year with exceptions being granted only for emergency proposals in accordance with existing NCWM policy.
- Form 15s must be heard by the Regional Conferences and must receive at least one recommendation that the item be given Voting, Developmental, Assigned or, Informational status before it can be considered by the NCWM Standing Committee.
- Encourage, support and, expect Committees to begin their work well before the Conferences.

COMMITTEE REPORTS – CONCISE SUMMARIES AND RATIONALE

Well written and well-structured committee reports are essential to excellent standards development. Initially the members use the reports to help them determine how to vote, testify and in some instances offer changes. Members read the reports to understand the fundamental issue, gain insights about the stakeholder positions and understand how opposing views were resolved. After the standard is published in the handbook the reports serve to document the intent and discussions and are used by jurisdictions to determine how to apply the standards. The National Committee reports can be lengthy and difficult to follow. The Regional Committee reports can be superficial rather than a comprehensive summary of discussions, data analysis and, rationale for their recommendations. The charter team recognizes that time constraints at the meetings, both Regional and National, put a great deal of pressure on Committee members to meet deadlines at the cost of quality. The first three recommendations below apply to both Regional and National Committees.

RECOMMENDATIONS

- Develop aids or checklists to guide committee members in writing the reports. Some of the items to address in a checklist are:
 - Identification of the regulators, stakeholders, subgroups, NIST or other federal agencies involved in the issue.
 - Identification of all sections of the Handbooks affected by the changes.
 - Identification of any federal statutes or regulations affected by the changes.

- Discussion of the conflicting positions and resolutions.
 - Recommendation to submit the item to a subgroup and reasons to form a subgroup.
 - Recommendation to return the item to the submitter for development
- Provide support to Committees in the form of web meetings, conference calls and other logistic support.
- Consider appointing a secretary to take notes, draft addendums and do a first draft of the Committee Reports. The secretary should not be a Standing Committee member or NIST Technical Advisor, nor should they have a vested interest in the proposals being considered by the Committee.
- Require an update be provided to the Regional Committees by NCWM subgroups prior to or at each Regional Meeting.
- Assemble a team to redesign and reformat the Committee reports. The team should identify the key elements of a report, develop a format that summarizes the current proposal, so the reader can quickly understand the issue they will be voting on and that provides a history and background of the item's development.
- Host a NIST/NCWM workgroup to discuss roles and responsibilities regarding standards development and publication of reports. Clarify these roles and responsibilities for both National and Regional organizations.

CONCEPT 2 – TWICE A YEAR VOTING

CHANGE MEETING PROCESSES – VOTE AT BOTH SUMMER AND WINTER MEETINGS

NCWM's traditional annual and interim meetings would require process changes to implement a twice a year voting system. The meetings are addressed as a Summer Meeting and a Winter Meeting below. Voting would take place during each session and require attendance in person. The Winter meeting would be extended by one day to accommodate the hearings, Committee meetings and Voting sessions.

RECOMMENDATIONS

The 2016 Charter Team proposed the following sequence for the NCWM and Regional Meetings and outlined the activities and actions for each. The 2017 Charter Team made some editorial changes to their recommendations.

- Summer Meeting Committees will hold open hearings.
 - Committees develop addendum sheets.
 - Addendum sheets will include a list of all items designated for carryover and the status they will have in Pub 15. This will include Voting status items for the Winter Meeting.
 - Items will be voted on by the membership.
 - Within one week of the end of the Summer Meeting voting session, the committees will assess the status of any items that had been returned to committee in the Summer Meeting Voting Session and assign a status.
 - New Committee members would begin their terms upon completion of item e above.
- SWMA and WWMA meet in the Fall
 - Provide comment on all carryover items.

- Receive and make recommendations for status on all new proposals.
- NCWM will create Pub 15
 - All carryover items will have the status assigned by the NCWM standing committee following the Summer Meeting.
 - All new items will be presented in Pub 15 without status. These items will be discussed and assigned a status by the NCWM standing committees in the addendum sheets at the Winter Meeting.
- Winter Meeting Process. This process will be similar to the Summer Meeting. It will include a voting session and the meeting will be extended by one day. Following is the process.
 - Committees will hold open hearings.
 - Committees develop addendum sheets.
 - Addendum sheets will include a list of all items designated for carryover and the status they will have in Pub 16. This will include Voting status items for the Summer Meeting.
 - Items will be voted on by the membership.
 - Within one week of the end of the Winter Meeting voting session, the Committees will assess the status of any items that had been returned to committee in the Winter Meeting Voting session and assign a status.
- CWMA and NEWMA meet in the spring.
 - Provide comment on all carryover items.
 - Receive and make recommendations for status on all new proposals.
- NCWM creates Pub 16.
 - All carryover items will have the status assigned by the NCWM standing committee following the Winter Meeting.
 - All new items will be presented in Pub 16 without status. These items will be discussed and be assigned a status by the NCWM Standing Committees in the addendum sheets at the Summer Meeting.

AMEND BYLAWS AND POLICIES TO IMPLEMENT TWICE A YEAR VOTING

The NCWM bylaws and policies must be changed to implement twice a year voting; the articles of incorporation would not need to be changed. Most of the changes would be to rename the Interim and Annual Meetings. Changes to bylaws require a vote of the membership and changes to policies are made by the Board of Directors.

RECOMMENDATIONS

Change the bylaws and policies listed below to implement twice a year voting.

Bylaws:

- Article IV
 - Section 3 – Waiver of Registration and Membership Fees
- Article VI

- Section 2 – Directors Eligibility, Part B.
- Section 3 – Nominations and Elections, Parts A, B, C, D
- Section 5 – Removal of Directors
- Section 6 – Appointive Officials, Part B.
- Article VII
 - Section 10 – Sergeants-at-Arms
- Article VIII
 - Section 1 – Annual Meeting
 - Section 2 – Meetings
 - Section 3 – Special Meetings, Part B.
- Article IX
 - Section 5
 - Part C, 3. Conference Training Topics
 - Part D. Nominating Committee
- Article X – Voting System
 - Section 1
 - Part A. Official Designation
 - Part B. Composition
 - Part C, Method of Designation
 - Section 2, House of Delegates
 - Section 3, House of General Membership
 - Section 5 – Voting Rules, Part B.
 - Section 9.A. Part C (statement above chart)
- Article XI – Amendments

Policies:

- 2.1.1. Observer Fees
- 2.1.3. One-Day Registration Fee
- 2.1.4. Waived Registration Fee for Guest Speakers
- 2.1.5. Student Registration
- 2.3.1. Hospitality Suites
- 2.3.2. Event Sponsorship
- 2.3.3. NCWM Meeting Space
- 2.4.1. Committee Work Session Protocol
- 2.4.2. Training Session Topics
- 2.4.3. Retired Member Voting Privileges
- 2.4.4. Committee Work Schedules
- 2.4.5. Written Testimony
- 2.4.7. Recording Meetings 2.4.8. Transparency in Representation
- 2.6.2. Special Awards Subcommittee

CHANGE PUBLICATION, ADMINISTRATIVE, FINANCIAL AND OTHER PRACTICES

Adopting a twice a year voting cycle would require changes to other parts of NCWM and NIST operations. Following are a list of questions raised by Charter Team One and in some instances Charter Team Two responded with their recommendations.

QUESTIONS AND RECOMMENDATIONS

1. Would standards be printed twice per year or remain on an annual cycle?

Charter Team Two recommends remaining with one printing per year. States adopt the NIST standards in various ways; some adopt by reference, some adopt through administrative rulemaking and others write the handbook provisions into administrative rules.

2. What constitutes the long-standing NCWM Annual Reports?
3. Would we have an outing at the Winter Meeting?
4. NCWM offers to pay committee travel to the Interim Meeting, but not the Annual. Would we offer to pay for both? Or the expenses for each? Or continue paying for just the Winter Meeting?

Charter Team Two recommends that NCWM consider options for continuing support of committee member travel. **NOTE:** NCWM does not presently recoup these costs through registration fees.

5. In any case, there would be an increase in Winter Meeting registration fees to cover;
 - Added day of audiovisual fees.
 - Added day of light breakfast.
 - Added day of staff travel.
 - Added printing costs for addendum sheets.
6. Annual Business Meeting: Will this still be held just at the Summer Meeting?
7. Special Awards: Would these remain just at the Summer Meetings?

CONCLUSIONS OF THE CHARTER TEAM REPORT OF JULY 2016

1. Standing Committee Agendas include too many items. In recent years, agendas have overwhelmed committee members. Committee work sessions have become all-consuming and diminish the Committee's final work product. Late nighttime commitments affect committee members' morale and cause difficulties in recruiting new Committee Members. The existing agenda item designation system only provides guidance to the Committees as it relates to the status of an item.
2. Items remain on committee agendas for indefinite periods of time. Clearly there are agenda items that need extensive development but **revisiting and/or voting** on the same items on a yearly basis raises frustration and causes interested groups to question the credibility of the Conference. Interested parties have bypassed the NCWM process and have reached out to the Federal and State Governments for favorable legislation. Some states have passed "boutique legislation" to address that state's immediate need.
3. Adoption or non-adoption of agenda items by the Conference as a whole occurs just once a year. Items that are ready for a vote or have been voted on and are ready for a revote cannot be revisited until the July Annual Meeting. Voting only once a year inherently slows the approval process.
4. Agenda items can be intensely technical and inconsistent technical knowledge of a specific item by committee members can hinder the study of the item. Committees may not have the expertise or time to develop items, and proposal authors may not have the resources or connections to reach out to affected parties except at national meetings. The result is that items of a technical nature may not be developed adequately before reaching the Committee and may return year after year without significant change because of a continuing lack of resources for development.

5. Committee Chairpersons have broad authority and control over their agendas. The tools provided to committee chairs are explained in detail during the NCWM Committee Orientation process, but we believe Committee Chairs do not use these tools enough in reviewing agenda content. Also, emphasis should be placed on the most efficient utilization of time outside of the NCWM meeting timeframes to work on agenda items.
6. Comments during Open Hearings and the voting process at times are not directed to the Committees and their Chairpersons, inviting “back and forth” discussions on agenda items. Although comments are strongly encouraged, “back and forth” discussions can cause unnecessary delays and can diminish the time necessary to consider “last minute” changes. As a result, an item deemed by the Committee ready for a vote may be quickly “pulled back” increasing the time it remains on an agenda.
7. Subcommittees perform an important function by advising and assisting the standing committees on agenda specific topics. A Subcommittee’s recommendation and work product become an integral part of an agenda item. Subcommittee members are subject matter experts, whose expertise and background should be fully utilized by standing committees.
8. Every proposal/agenda item presented to a regional association and/or to NCWM is distinct and raises a corresponding level of interest. Determining “how long” an item takes to move through the NCWM process is difficult and is driven by the uniqueness (technical nature and the widespread effect on the marketplace) of agenda items. Data suggests that most items move relatively smoothly through the Conference approval process, but that suggestion is clearly diminished by the uniqueness of an item.

NCWM members representing different interests have raised concerns that NCWM will not be able rise to the challenges it will confront in the 21st Century. Finding solutions to the concerns identified above will greatly assist the conference in meeting those challenges.

Mr. Jerry Buendel, Washington | Chair & Western Representative
Mr. Hal Prince, Florida | Southern Representative
Mr. Louis Sakin, Towns of Hopkinton/Northbridge | Northeastern Representative
Mr. Robert DeRubeis, Michigan | Central Representative
Mr. Eric Golden, Cardinal Scale Manufacturing | Associate Member
Mr. Robert Upright, Vishay Transducers | Associate Member
Mr. Don Onwiler, NCWM
Dr. Doug Olson, NIST/OWM

Charter Team Two Committee Members

Appendix E

Publications 15 and 16 Committee Report Format Sample Item

SCL-7 V S.1.8.5. Recorded Representations, Point of Sale Systems

Source:

Kansas and Minnesota (2017)

Purpose:

Provide consumers the same opportunity, to be able to easily verify whether or not tare is taken on items weighed at a checkout stand using a POS system, which is currently afforded them when witnessing items being weighed and priced in their presence using other scales in the store.

Item under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

S.1.8.5. Recorded Representations, Point-of-Sale Systems – The sales information recorded by cash registers when interfaced with a weighing element shall contain the following information for items weighed at the checkout stand:

- (a) the net weight;¹
- (b) the unit price;¹
- (c) the total price; and
- (d) the product class or, in a system equipped with price look-up capability, the product name or code number.

(e) *the tare weight*¹
[Non-retroactive January 1, 2022]
(Amended 20XX)

¹ For devices interfaced with scales indicating in metric units, the unit price may be expressed in price per 100 grams. Weight values shall be identified by kilograms, kg, grams, g, ounces, oz, pounds, or lb. *The “#” symbol is not acceptable.*

[Nonretroactive as of January 1, 2006]

(Amended 1995 and 2005)

Previous Action:

- **2017: Voting Item returned to Committee**
- **2018: Voting Item**

Original Justification:

This proposal would benefit consumers by enabling them to see at a glance that tare is being taken on the commodities they purchase. It would also educate the public about tare and make them better and more aware consumers.

Retailers would benefit because this proposal would aid their quality control efforts behind the counter and at the cash register. Retailers would be able to see that their employees are taking tare on packages, and that the tare employees take is the appropriate tare. For example, a meat manager would be able to spot packages of 1 lb. hamburger which

had been packaged on the night shift mistakenly using the tare for family packs of chicken, just by walking down the meat counter and noticing a 0.06 lb. tare on a package size that would normally have a 0.02 or 0.03 lb. tare. The manager could also spot a 0.03lb tare on packages that should have a 0.06lb tare. Either way, the manager would be able to remove the items from the shelf and make corrections before the store or its customers were harmed. The manager would also be able to re-educate the employees responsible for the error. This improved quality control and transparency would build consumer confidence in retailers' establishments. It might even reduce the time and disruption retailers experience from official package inspections.

Package checking inspections potentially could be reduced because weights and measures officials could make risk-based assessments on the need to do package checking inspections at any given location. If an official notes that gross weights or tares are visible on all random-weight packages, and that the tares seem appropriate to the package sizes, the official may be able to skip that location and focus package checking efforts on locations where tares are absent or seem inappropriate for the package sizes. That would be more efficient for both retailers and weights and measures jurisdictions. Some retailers may not want consumers to have this information as it will allow consumers and weights and measures officials to hold them accountable and would be written proof tare was not taken when, and if, that happens.

Finally, this proposal would aid weights and measures officials investigating complaints about net contents of item by creating written proof of how much tare was taken on a given package or transaction.

Arguments in Favor:

- It is very difficult for customers at a checkout stand to determine whether or not tare has been taken on products weighed by a store cashier on POS systems that display only a gross weight when the net weight is the only weight information appearing on the sales receipt. This is especially true, she said, when there are multiple items in a customer's shopping cart to be weighed.
- Additional information is needed on the sales receipt to make it possible for consumers to ensure tare has been taken on items weighed at a POS checkout.
- Several POS devices already provide tare information on the printed receipt.
- The proposed item would provide more information for investigations of consumer complaints.
- Printing tare values on POS register receipts is a tool for regulators and store managers to audit how personnel are doing with taking tares.
- Consumers deserve to be protected.
- This is a non-retroactive requirement that impacts equipment that is installed after the non-retroactive date.
- If customers were asked if they wanted to be charged correctly, they would say "yes," regardless if they knew what the term "tare" meant.
- Many grocers deliver products from the store to customers' homes and customers are not present during the weighing of these items to witness whether tare was taken or not during the transaction.
- Inspection of programmed tare values is not sufficient as this may not be the value used during the transaction.

Arguments Against:

- It would be too costly for scale manufacturers and retailers to modify software and label and receipt designs with little benefit.

- Even though the requirement would be nonretroactive for a period of time, retailers with point of sale systems and packaging scales may feel pressured to update software or purchase new devices in response to consumer demand for tare information on labels and receipts.
- The amount of paper needed to print customer receipts may increase depending on the formatting of the information and the size of the paper being used.
- All tare weights would be required on the receipt, regardless of if it were 1 or 100 weight transactions.
- The requirement would be costly to industry (e.g., increased costs for software development, employee training, and consumer education) and additional costs would be passed on to the consumer.
- Customers have not asked for this information.
- Regulators can verify that tare values in POS systems are accurate and this would confuse consumers.

Item Development:

The original proposal applied S.1.8.5. Recorded Representation, Point-of-Sale Systems and created a new proposed paragraph S.1.9.3. Recorded Representations, Random Weight Package Labels as follows:

S.1.8.5. Recorded Representations, Point-of-Sale Systems – The sales information recorded by cash registers when interfaced with a weighing element shall contain the following information for items weighed at the checkout stand:

(a) the net weight;¹

(b) the gross weight or tare weight;¹

(~~bc~~) the unit price;¹

(~~ed~~) the total price; and

(~~de~~) the product class or, in a system equipped with price look-up capability, the product name or code number.

[Non-retroactive January 1, 20XX]

¹ For devices interfaced with scales indicating in metric units, the unit price may be expressed in price per 100 grams. Weight values shall be identified by kilograms, kg, grams, g, ounces, oz, pounds, or lb. *The “#” symbol is not acceptable.*

[Nonretroactive as of January 1, 2006]

(Amended 1995 and 2005)

And

S.1.9.3. Recorded Representations, Random Weight Package Labels – A prepackaging scale or a device that produces a printed ticket as the label for a random weight package shall produce labels which must contain the following information:

(a) the net weight;¹

(b) the gross weight or tare weight;¹

(c) the unit price;¹

(d) the total price; and

(e) the product class or, in a system equipped with price look-up capability, the product name or code number.

[Non-retroactive as of January 1, 20XX]

At the 2017 Interim Meeting, the committee deleted the S.1.9.3. Recorded Representations, Random Weight Package Labels because it conflicts with NIST Handbook 130 Uniform Packaging and Labeling Regulation. Additionally, the committee agreed with comments that consumers would be better served with a consistent means for representing tare, so the option of printing gross weight or tare weight was modified to simply require tare weight.

The Committee also received a suggestion to require at some future date that the tare weight appear on displays rather than requiring the information on sales receipts. However, even if a customer is able to view the tare indication from a POS display, the committee noted that there still needs to be a paper trail of the recorded transaction information for enforcement purposes.

The submitters requested, and the Committee agreed to modifications to the proposals in response to some concerns that were raised.

- Place the tare weight at the as the last information in the transaction.
- Extend the nonretroactive date to 2022 to allow more time to develop the software.

No additional changes have been made following the January 2017 deliberations.

Regional Association Comments:

WWMA: The Committee is recommending this item to be an informational item with the following changes to the purpose and text of the item copied from Appendix A, Page S&T – A24, as agreed by the S&T Committee at the 2017 NCWM Annual Meeting.

S.1.8.5. Recorded Representations, Point-of-Sale Systems – The sales information recorded by cash registers when interfaced with a weighing element shall contain the following information for items weighed at the checkout stand:

(a) the net weight;¹

(b) the unit price;¹

(c) the total price; and

(d) the product class or, in a system equipped with price look-up capability, the product name or code number.

(e) the tare weight¹

[Non-retroactive January 1, 2022]

(Amended 20XX)

SWMA: The Committee heard comments from Mrs. Tina Butcher (NIST OWM) who noted that the title of the item in the Appendix to the Committee's report still includes a reference to a part of the original proposal which would have required the tare weight to be printed on random-packed products. That portion of the proposal was removed from the proposal prior to the NCWM Annual Meeting. In addition, she noted that the submitters of the item made

modifications to the proposal following the 2017 Annual Meeting. The modifications recommend extending the nonretroactive date to 2022 (rather than 2020) and moving the reference to “tare weight” to the last item in the list.

The Committee heard some comments on the proposal indicating there was some confusion about the purpose of the proposal and what specifically was being recommended. The Committee heard multiple comments, both in support of and in opposition to the proposal and consequently, recommends the item for a vote to allow the membership to decide.

CWMA: The SMA opposes this item due to the implementation costs to the manufacturers, retailers, and consumers. Iowa stated they supported the item as previously proposed, excluding the non-retroactive date. The Committee believes this item has been fully developed and should be moved to a vote.

NEWMA: Mr. Eric Golden (Cardinal Scale) commented that the SMA opposes this item. Comments were heard on the possible confusion it could lead to. Comments were heard on withdrawing the item. Mr. Lou Sakin (Massachusetts) believed the item had merit and recommend voting. The Committee recommends this item be moved forward as an Informational Item.

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Laws and Regulations (L&R) Committee 2020 - 2021 Final Report

Mr. Ethan Bogren, 2020 Committee Chair
Westchester County, New York

Mr. John McGuire, 2021 Committee Chair
New Jersey

INTRODUCTION

This is the final report of the Laws and Regulations Committee (hereinafter referred to as the “Committee”) for the 105th and 106th Annual Meetings of the National Conference on Weights and Measures (NCWM).

NCWM convened the 105th Annual Meeting in July 2020, then adjourned to January 10, 2021, due to the lack of a quorum. On January 10-12, 2021, the NCWM reconvened the 105th Annual Meeting and held virtual voting on the 2020 Agenda Items. This was followed by the 2021 Interim Meeting conducted January 13-15, 2021.

Robert’s Rules of Order allow virtual voting, provided that NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the NCWM Bylaws at that time and Robert’s Rules of Order, items approved by a virtual vote are effective upon ratification at the next in-person opportunity. The 106th NCWM Annual Meeting was held July 19-22, 2021. NCWM obtained a court order allowing for virtual voting at the 106th Annual Meeting to ratify the decisions of the 105th Annual Meeting, including a bylaw amendment allowing for official virtual voting for the agenda items of the 106th Annual Meeting.

This final report contains the proceedings from both the 2020 and 2021 Annual Meetings. The report is based on the 2021 Interim Meeting Agenda offered in NCWM Publication 15; the 2021 NCWM Publication 16, “Committee Reports;” testimony at public hearings; comments received from the regional weights and measures associations and other parties; addendum sheets issued at the 2020 and 2021 Annual Meetings; actions taken by the membership at the voting sessions of the two (105th and 106th) Annual Meetings; and ratifications by the NCWM at the 106th Annual Meeting. This report contains those recommendations to amend National Institute of Standards and Technology (NIST) Handbook 130 (2019 and 2020), “Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality,” or NIST Handbook 133 (2020), “Checking the Net Contents of Packaged Goods.”

Table A identifies the agenda items by reference key, title of item, page number and the appendices by appendix designations. The acronyms for organizations and technical terms used throughout the agenda are identified in Table B. The first three letters of an item’s reference key are assigned from the Subject Series List. The next 2 digits represent the year the item was introduced. The status of each item contained in the report is designated as one of the following: **(V) Voting Item:** the committee is making recommendations requiring a vote by the active members of NCWM; **(I) Informational Item:** the item is under consideration by the Committee but not proposed for Voting; **(A) Assigned Item:** the Committee has assigned development of the item to a recognized subcommittee or task group within NCWM. **(D) Developing Item:** the Committee determined the item has merit; however, the item was returned to the submitter or other designated party for further development before any action can be taken at the national level; **(W) Withdrawn Item:** the item has been removed from consideration by the Committee.

Table C provides a summary of the results of the voting on the Committee’s items and the report in its entirety. Some Voting Items are considered individually; others may be grouped in a consent calendar. Consent calendar items are Voting Items that the Committee has assembled as a single Voting Item during their deliberation after the Open Hearings on the assumption that the items are without opposition and will not require discussion. The Voting Items that have been grouped into consent calendar items will be listed on the addendum sheets. Prior to adoption of the consent calendar, the Committee entertains any requests from the floor to remove specific items from the consent calendar to be discussed and voted upon individually.

Committees may change the status designation of those items (Developing, Informational, Assigned, Voting and Withdrawn) up until the report is adopted, except those items which are marked Developing, Informational, Assigned

or Withdrawn cannot be changed to Voting Status. Any change from the Committee Interim Report (as contained in this publication) or from what appears on the addendum sheets will be explained to the attendees prior to a motion and will be acted upon by the active members of NCWM prior to calling for the vote.

Proposed revisions to the handbook(s) are shown as follows. 1) deleted language is indicated with a **bold face font using strikeouts** (e.g., ~~this report~~), and 2) proposed new language is indicated with an **underscore bold faced font** (e.g., **new items**). When used in this report the term “weight” means “mass.”

Note: The policy of NIST is to use metric units of measurement in all its publications; however, recommendations received by NCWM technical committees and regional weights and measures associations have been printed in this publication as submitted. Therefore, the report may contain references to U.S. customary units.

Subject Series List

NIST Handbook 130 – General	GEN Series
Uniform Laws	
Uniform Weights and Measures Law	WAM Series
Uniform Weighmaster Law	WMR Series
Uniform Fuels and Automotive Lubricants Inspection Law	FLL Series
Uniform Regulations	
Uniform Packaging and Labeling Regulation	PAL Series
Uniform Regulation for the Method of Sale of Commodities	MOS Series
Uniform Unit Pricing Regulation	UPR Series
Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices	RSA Series
Uniform Open Dating Regulation	ODR Series
Uniform Regulation for National Type Evaluation	NTP Series
Uniform Fuels and Automotive Lubricants Regulation	FLR Series
Examination Procedure for Price Verification	PPV Series
NCWM Policy, Interpretations, and Guidelines	POL Series
NIST Handbook 133	NET Series
Other Items	OTH Series

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Appendix

Appendix A. Item Block 1 (B1) NIST OWM White Paper – Verifying the net quantity of contents of multiunit and variety packages L&R – A1

Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
ACEA	European Automotive Manufacturer Standards	NEWMA	Northeastern Weights and Measures Association
ASTM	ASTM International	NIST	National Institute of Standards and Technology
API	American Petroleum Institute	NCWM	National Conference on Weights and Measures
CFR	Code of Federal Regulations	OWM	Office of Weights and Measures
CWMA	Central Weights and Measures Association	PALS	Packaging and Labeling Subcommittee
FALS	Fuels and Lubricants Subcommittee	S&T	Specifications and Tolerances
FDA	Food and Drug Administration	SAE	SAE International
FTC	Federal Trade Commission	SWMA	Southern Weights and Measures Association
HB	Handbook	UPLR	Uniform Packaging and Labeling Regulation
ILMA	Independent Lubricant Manufacturers Association	USDA – FSIS	U.S. Department of Agriculture – Food Safety and Inspection Service
L&R	Laws and Regulations	USNWG	U.S. National Work Group
LPG	Liquefied Petroleum Gas	WWMA	Western Weights and Measures Association
MAV	Maximum Allowable Variation		

Table C.
Summary of Voting Results 2020 Annual

<i>Reference Key Number</i>	<i>House of State Representatives</i>		<i>House of Delegates</i>		<i>Results</i>
	<i>Yeas</i>	<i>Nays</i>	<i>Yeas</i>	<i>Nays</i>	
MOS-20.3	37	0	34	0	Adopted
B5: MOS-18.2	37	1	44	1	Adopted
B5: FLR-20.4	37	1	44	1	Adopted
B2: MOS-20.1	35	0	43	0	Adopted
B2: FLR-20.1	38	1	38	3	Adopted
B3: FLL-18-1	39	1	40	2	Adopted
To Accept the Report	45	0	0	0	Adopted

The 105th NCWM Annual Meeting convened in July 2020, then adjourned to January 10, 2021, due to the lack of a quorum. NCWM reconvened the 105th Annual Meeting on that date and held virtual voting on the 2020 Agenda Items shown in the above table, “Table C, Summary of Voting Results 2020 Annual.” Robert’s Rules of Order allow virtual voting, provided that NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the NCWM Bylaws at that time and Robert’s Rules of Order, items adopted by a virtual vote are effective upon ratification at the next in-person opportunity. NCWM obtained a court order allowing for virtual voting at the 106th Annual Meeting in July 2021 to ratify the decisions of the 105th Annual Meeting, including a bylaw amendment allowing for official virtual voting at the 106th Annual Meeting. The 105th Annual Meeting items were ratified in a consent calendar on the Board of Directors Agenda at the 106th Annual Meeting.

Table C
Summary of Voting Results 2021 Annual

<i>Reference Key Number</i>	<i>House of State Representatives</i>		<i>House of Delegates</i>		<i>Results</i>
	<i>Yeas</i>	<i>Nays</i>	<i>Yeas</i>	<i>Nays</i>	
Consent Calendar B3: MOS-18.1., B7: B3: FLR-18.1., B7: MOS-21.2., B7: FLR 21.3	39	0	34	0	Adopted
PAL-21.1	40	0	42	0	Adopted
MOS-20.	25	13	21	14	Returned to Committee
OTH-07.1	Voice Vote				Adopted
To Accept the Report	Voice Vote				Adopted

Details of All Items
(In order by Reference Key)

FLL– UNIFORM FUELS AND AUTOMOTIVE LUBRICANTS INSPECTION LAW

FLL-18.1 V Section 8. Prohibited Acts

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert’s Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

(This item appeared as part of Block 3 (B3: FLL-18.1) on the NCWM 2020 Interim Meeting Report. This was the only item in the block that proceeded as a Voting Item by the L&R Committee.)

Source:

Independent Lubricant Manufacturers Association (ILMA)

Purpose:

Provide information to protect consumers from purchasing obsolete motor oils that can harm modern engines.

Item Under Consideration:

Amend NIST Handbook 130, Uniform Fuels and Automotive Lubricants Inspection Law, Section 8.6. Prohibited Acts.

Section 8. Prohibited Acts

It shall be unlawful to:

8.6. Misrepresent automotive lubricants with an ~~S.A.E.~~ SAE (Society of Automotive Engineers) (SAE International) viscosity grade or performance categories as provided in the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (other than “Energy Conserving”)” API 1509 “Engine Oil Licensing and Certification System,” European Automobile Manufacturer Standards (ACEA), “European Oil Sequences,” or other “Vehicle or Engine Manufacturers Standards” as applicable. ~~(American Petroleum Institute) service classification other than those specified by to the intended purchaser.~~

(Added 1996) (Amended 2021)

Background/Discussion:

Consumers are being misled and are not being adequately informed under existing NIST Handbook 130 provisions about the performance of “obsolete” oils in the engines of their vehicles. Many of these obsolete oils can damage modern engines. The submitter recognizes that there may be as many as 14 million vehicles that can use pre-1988 motor oils.

At the 2018 NCWM Interim Meeting, FALS Chair Striejewske indicated that FALS is recommending this as a Voting item. In addition, support was heard from ILMA, API, and several regulators recommending this item as a Voting item. However, many commenters stated that editorial and minor changes were still needed for the item to be fully developed. Mr. Tim Elliot (Washington) recommended that this item have streamlined language to use a generic warning statement. Suggestions were also provided on the ultimate placement of the label. Due to lack of consensus,

potentially non-editorial changes, and lack of specific details on proposed changes, the L&R Committee recommends this item be “Assigned” to FALS for further development to address the issues mentioned in this write-up.

At the 2018 NCWM Annual, FALS Chair Striejewski remarked that FALS received modified language from the submitter and FALS is recommending this item remain Assigned with the updated.

At the 2019 NCWM Interim Meeting, comments were heard from members of FALS stating that the level of discussion desired was not had regarding this item due to the absence of the submitter at the FALS meeting that was held Sunday, January 13, 2019. There were several comments regarding the term “modern” not being defined in the cautionary statements. Several stakeholders and regulators feel these items need further review and clarification. A Kansas regulator stated that the caution statement is incorrect and should be modified because it is oil being sold, not an engine. After consideration the Committee recommends this item remain Assigned to FALS.

At the 2019 NCWM Annual Meeting, FALS Chair Striejewski commented that the submitter has a revision (May 10, 2019) under the L&R supporting documents. This is the language that the Committee has moved forward for consideration.

Prior to the 2020 NCWM Interim Meeting, the submitter provided an updated proposal dated January 18, 2020. During the FALS meeting they recommended changes to Item FLL-18.1 Section 8, Prohibited Acts. The change to FLL-18.1 was presented by FALS Chair Striejewski on the screen for memberships review during open hearings and posted January 27, 2020. FALS believes the language is fully developed and sent it back to the L&R Committee.

During the open hearings, several members voiced their support for the block as amended by FALS and for it to move forward as a Voting Item: Mr. Kevin Schnepf (California), Mr. Jeff Harmening (API), Ms. Joanna Johnson (AOCA), Mr. Kurt Floren (Los Angeles County, California). Mr. Matthew Levetown (ILMA, representing submitter) supported the changes made by FALS but with 2 edits for “Automotive motor oil” not “Automotive lubricants” and the inclusion of a comma after “as applicable to purchaser”.

There was concern from a member that NCWM Publication 15 did not provide the latest language for this Block and that modifications are being sent in at the last minute. This has occurred for several items and this situation needs to be addressed. One solution may be for the submitter to provide printed copies. Ms. Lisa Warfield (NIST OWM) stated she understands the frustration of membership, but updated proposals can all be found on the NCWM website listed as supporting documents.

The Committee moved this item forward as a Voting item with minor editorial changes.

Section 8. Prohibited Acts

It shall be unlawful to:

8.6. Misrepresent automotive lubricants with an S.A.E. (Society of Automotive Engineers) viscosity grade or API (American Petroleum Institute) service classification other than those ~~specified~~ by the intended purchaser.

(Added 1996) **(Amended 20XX)**

At the 2020 NCWM Annual Meeting this item appeared as part of Block 3 on the L&R Agenda with two other related items (MOS-18.1 and FLR-18.1). Mr. Jeffrey Leiter (ILMA) spoke in support of only Item FLL-18.1 proceeding as a Vote. FALS Chair Striejewski stated that FALS members are also in support of this item going to Vote. There were many industry and regulators that spoke in support of this item. The Committee agreed that this item was fully developed and removed it from Block 3, so that it could proceed as a standalone Voting Item. The two remaining items remained in Block 3 and were downgraded in status (refer to Item Block 3 within this report).

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the 2019 WWMA Annual Meeting, the Committee is recommending this block be provided a Developing status.

FLL-18.1. Engine Fuels & Automotive Lubricants Inspection Law, Section 8.6 Prohibited Acts

It was noted within background information in the report that the submitter did not address the concern with Section 8.6. as to why the term “specified” is being stricken. In addition, the sentence is not complete and the Committee questions “what is the meaning of the sentence, it appears to place the burden on the purchaser?” The Committee recognizes this is a preexisting regulation but would like it addressed by FALS. Based on comments and uncertainty of FLL-18.1, WWMA recommend that the submitter continue to work with FALS to develop this item.

At the 2019 SWMA Annual Meeting, it was noted the header file for B3: FLR-18.1. should read 18.5. and B3: MOS-18.1. should read 18.4. In Section 8. Prohibited Acts the first word in the language should “misrepresent” and not “represent.” This is being addressed editorially in NIST Handbook 130 (2020) issue. It was requested that the submitter clarify as to what the submitter is intending in B3: FLL-18.1. Section 8.6. The Committee is recommending this remain at FALS and the concerns be addressed.

At the 2019 NEWMA Interim Meeting, Mr. Jeff Leiter (ILMA) commented that this proposal follows language that was recently adopted in California that addresses non-compatible or “obsolete” oils in the marketplace. This effort is intended to address current litigation being considered in multiple states. Ultimately, this current language is a product of further work with regulators as well as additional language which was inadvertently left out of the regional agenda proposals. The Committee recommends the item is ready for voting as amended.

The Committee recommends the following amendment:

Section 8. Prohibited Act

It shall be unlawful to:

8.6. Misrepresent automotive lubricants with an S.A.E. (Society of Automotive Engineers) viscosity grade or API (American Petroleum Institute) service classification ~~other than those specified by~~ to the intended purchaser~~consumer~~.

(Added 1996) **(Amended 20XX)**

At the 2019 CWMA Interim Meeting, L&R Chairman Mr. Musick (Kansas) commented that there is confusion in the numbering of this item, and the table of contents reference is accurate. Mr. Musick also reviewed changes submitted changes from Mr. Leiter’s which mirrored proposed changes from the 2019 NEWMA regional meeting. Mr. Ron Hayes (Missouri) commented that there are too many obsolete oils in the marketplace, and we need to do all we can to provide consumers with some protection in this area. Mr. Hayes suggested to double-check the language to be sure it is uniform between sections of the handbook. Mr. Charlie Stutesman (Kansas) commented that he has been frustrated with how much the language for this item changes before each time we meet at both the regional and national levels, and it is very hard to take a position when there is constant change.

The Committee recommends this item has been fully vetted through each region and is ready for voting status as amended below. The version listed below was received October 21 by Doug Musick:

Uniform Engine Fuels and Automotive Lubricants Inspection Law**Section 8. Prohibited Acts**

It shall be unlawful to:

8.6. Misrepresent automotive lubricants with an S.A.E. (Society of Automotive Engineers) viscosity grade or API (American Petroleum Institute) service classification to the ~~other than those specified by the intended purchaser/consumer.~~

(Added 1996) (**Amended 20XX**)

(**Note:** The change from “represent” to “misrepresent” is an editorial change made by NCWM/NIST. The other proposed language change was recommended by NEWMA’s L&R Committee.)

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports to review these documents

**ITEM BLOCK 1 (B1) HB 130, UPLR, SEC. 2.8. MULTIUNIT PACKAGE. HB 133
MODIFY “SCOPE” FOR CHAPTERS 2 – 4, ADD A NOTE
FOLLOWING SECTIONS 2.3.7.1. AND 2.7.3., CREATE A
CHAPTER 5. SPECIALIZED TEST PROCEDURES AND
HB133 APPENDIX F. GLOSSARY**

B1: PAL-19.1	I	Section 2.8. Multiunit Package
B1: NET-19.1	I	Section 1.2.4. Maximum Allowable Variation
B1: NET-19.2	I	Modify “Scope” for Chapters 2 – 4, and a note following Section 2.3.7.1. Maximum Allowable Variation (MAV) Requirement and 2.7.3. Evaluation of Results – Compliance Determinations
B1: NET-19.3	I	Create a Chapter 5, Specialized Test Procedures
B1: NET-19.4	I	Appendix F. Glossary

(B1:NET-19.3, “Handbook 133, Create a Chapter 5. Specialized Test Procedures” must be adopted in order for the remainder of Item Block 1 to proceed.)

B1: PAL-19.1 I Section 2.8. Multiunit Package

Source:

NIST OWM

Purpose:

Eliminate conflicts between the UPLR and Federal Trade Commission (FTC) regulation for multiunit packages cited in 16 CFR 500.27.

Item Under Consideration:

Amend NIST Handbook 130, Uniform Packaging and Labeling Regulation as follows:

2.8. Multiunit Package. – A package containing two or more individual packages of the same commodity, in the same quantity, intended to be sold as a multiunit package, ~~but where the component packages are labeled individually in full compliance with all requirements of this regulation.~~

B1: NET-19.1 I Section 1.2.4. Maximum Allowable Variation

Purpose:

Amend language regarding the total quantity declaration on multiunit or variety packages, when the MAV may need to be recalculated based on the Total Quantity MAV.

Item Under Consideration:

Amend NIST Handbook 133, Chapter 1 as follows:

1.2.4. Maximum Allowable Variation

The limit of the “reasonable minus variation” for an under filled package is called a “Maximum Allowable Variation” (MAV). An MAV is a deviation from the labeled weight, measure, or count of an individual package beyond which the deficiency is considered an unreasonable minus error. Each sampling plan limits the number of negative package errors permitted to be greater than the MAV.

Packages may be offered for sale individually or offered for sale in multiunit packages or variety packages which contain two or more individual inner packages.

When packages are tested whether individual, multiunit, or variety packages, the MAV is applied to each package in the sample which has a minus package error.

When a total quantity declaration on a multiunit or variety package is being verified, and the MAV is not determined in terms of a percent of the labeled quantity, a “Total Quantity MAV” is compared to each minus Total Quantity Package Error(s) to determine if it is unreasonable.

Total Quantity Package Error = Sum of Individual Inner Package Errors

(Amended 2010 and 20XX)

Before determining the MAV and proceeding with tests of the quantity of contents in any multiunit or variety package, calculate the sum of the labeled quantity statements of all individual inner packages and verify that the labeled Total Quantity Statement reflects the accurate sum. If an error exists between the sum of the labeled quantity statements of individual inner packages and the Total Quantity Statement, the package is not in compliance and shall be deemed in violation of labeling requirements of NIST Handbook 130, Uniform Packaging and Labeling Regulation, requiring an accurate summing and statement of total quantity. Do not test for net quantity determination.

1.2.4.1. Total Quantity MAV for Multiunit and Variety Packages (See Chapter 5. “Specialized Test Procedures”)

- a. Multiunit Package. – In verifying a total quantity declaration that appears on a multiunit package compare a Total Quantity MAV to each minus Total Quantity Package Error to determine if the error is unreasonable. Calculate the Total Quantity MAV using the following formula:

$$\text{Total Quantity MAV} = \text{Number of Individual Inner Packages} \times \text{MAV for Individual Inner Package Quantity}$$

Terms are defined as:

Number of Individual Inner Packages. – The total number of individual inner packages having a uniform labeled weight, measure and/or count.

MAV for Individual Inner Package Quantity. – The MAV for the labeled quantity for the individual inner packages specified in the proper table of MAVs in Appendix A. “Tables.”

- b. Variety Package. – In verifying a total quantity declaration that appears on a variety package, compare a Total Quantity MAV to each minus Total Quantity Package Error to determine if the error is unreasonable. Calculate the Total Quantity MAV using the following formula:

$$\text{Total Quantity MAV} = \text{The sum of the applicable MAVs for all Individual Inner Packages}$$

Variety packages include commodities that may be generically similar, but differ in weight, measure, volume, or design variation (e.g., color, flavor, scent, etc.) For these packages a Total

Quantity MAV is calculated for each product type within the variety package and the results are added to obtain a Total Quantity MAV for comparison to each minus Total Quantity Package Error.

Terms are defined as:

Number of Individual Inner Packages. – The total number of similar but not identical individual inner packages with differing and/or uniform labeled weight or measure.

MAV for Individual Inner Package Quantity. – The MAV for the quantity declared for the individual inner packages specified in the appropriate MAV table in Appendix A. “Tables.”

(Added 20XX)

B1: NET-19.2 I Sections 2.1. Scope, 3.1. Scope, 4.1. Scope, 2.3.7.1. Maximum Allowable Variation (MAV) Requirement, and Section 2.7.3. “Evaluation of Results – Compliance Determinations”

Purpose:

With the adoption of Handbook 133, Chapter 5. Specialized Test Procedures this item clarifies the language within NIST Handbook 133.

Item Under Consideration:

Amend NIST Handbook 133, Chapters 2, 3, and 4 as follows:

Add a Note to NIST HB133, Chapter 2, Section 2.1. “Scope;” Section 3.1. “Scope;” and Section 4.1 “Scope” that refers users to the Chapter 5. “Specialized Test Procedures” for these types of packages.

Note: If Multiunit or Variety Packages are to be inspected, refer to Chapter 5. “Specialized Test Procedures” for guidance in testing.

If a total quantity declaration is being verified and the MAV to be applied is not based on a percentage of the labeled quantity, refer to Section 1.2.4.1. “Total Quantity MAV for Multiunit and Variety Packages.”

(Added 20XX)

Add the following note to NIST HB133, Chapter 2, Section 2.3.7.1 “Maximum Allowable Variation (MAV) Requirement” and Section 2.7.3. “Evaluation of Results – Compliance Determinations.”

Note: If a total quantity declaration on a multiunit or variety package is being verified, and the MAV applied is not based on a percent of the labeled quantity see Section 1.2.4.1. “Total Quantity MAV for Multiunit and Variety Packages.

(Added 20XX)

B1: NET-19.3 I Create a Chapter 5. Specialized Test Procedures

Purpose:

Create new chapter in NIST Handbook 133 that has specialized test procedures to verify the inner contents of multiunit and variety packages.

Item Under Consideration:

Amend NIST Handbook 133, Chapter 5. Specialized Test Procedures as follows:

5.1. Scope

The following procedures are used in either verifying the net quantity of contents of retail multiunit packages with individual inner packages of the same commodity that have identically labeled quantities or in verifying retail variety packages with individual inner packages that may differ in labeled weight, measure or volume.

1. The procedure used is determined by using the labeled net contents.

- Use Section 5.2. “Individual Package Quantity” if a total net quantity of contents is not declared on the label of a multiunit or variety package of food for human consumption or meat or meat products from a USDA official establishment (see explanation in Section 5.2. for specific exemptions to requirement for a total net quantity statement.)
- Use Section 5.3. “Total Quantity” if a total net quantity of contents is declared on the package.

Note: If the packages are labeled with additional quantity statements (i.e., dry volume, area, length, width, or thickness), added steps or, when proper, additional Total Quantity MAVs may be required in testing the accuracy of additional quantity statements.

5.2. Individual Package Quantity

This procedure is used only for verifying the total content quantity statement of open or transparent-wrapped multiunit packages of foods for human consumption or meat or meat products under the authority of FDA or USDA, respectively. Under USDA-FSIS regulations (9 CFR 317.2 [h][12]) and FDA regulations (21 CFR 101.7 Chapter I [s]), such open multiunit packages that do not obscure the number of individual inner packages or the labeling of each individual inner package (compliant with all other location, type size, and applicable requirements) are not required to bear a total net quantity statement on the outside of the package (see Figure 1. Open or Transparent Multiunit Package with Fully Visible Individual Quantity Declarations).

Cereal	Cereal	Cereal	Cereal	Cereal
Net Wt 100 g (3.5 oz)	Net Wt 100 g (3.5 oz)	Net Wt 100 g (3.5 oz)	Net Wt 100 g (3.5 oz)	Net Wt 100 g (3.5 oz)

Figure 1. Open or Transparent Multiunit Package with Fully Visible Individual Quantity Declarations

5.2.1. Test Procedure for Multiunit Packages Exempt from Total Quantity Statement (see Section 5.2.)

- 1. Follow Section 2.3.1. “Define the Inspection Lot.” The inspection lot is defined as the total number of individual inner packages in the multiunit packages (e.g., 120 packages × 12 individual inner packages = Inspection Lot size is 1440). Select “Category A” or “Category B” sampling plan in the inspection (depending on location of test) and select a random sample (See Section 2.3.4. “Random Sample Selection”).**
- 2. Determine an average tare weight according to Section 2.3.5. “Procedures for Determining Tare and Average Tare Weight.” Follow Section 2.3.6. “Determine Nominal Gross Weight and Package Errors” to determine package errors.**
- 3. Determine the net quantity of each individual inner package in the sample.**
 - If a count declaration is declared on the multiunit packages, verify using Section 4.2. “Packages Labeled by Count” and apply the appropriate MAV using Appendix A. Table 2- 7. MAV for Packages Labeled by Count applied.

4. If minus package errors are found in the sample, the value of the MAV to be applied is determined by matching the labeled net quantity for the individual inner packages to the applicable quantity range in the appropriate MAV table using Appendix A “Tables”.

Compare the MAV for the labeled quantity to each minus package error in the individual inner packages to determine if any are unreasonable using Section 2.3.7.1. “MAV Requirement”. If the number of unreasonable errors exceeds the amount allowed for the sample size (see Appendix A. Tables 2-1. “Sampling Plans for Category A” or Table 2-2. “Sampling Plans for Category B.” Column 4), the sample fails. If the sample passes, go to Step 5.

5. Apply Section 2.3.7.2. “Average Requirement.” Follow the procedures in Section 2.3.7. “Evaluation for Compliance.”

5.3. Total Quantity

Use this procedure to test multiunit packages labeled with a total count and/or total net quantity declaration. This procedure can be used to verify the total net quantity declared on open or closed multiunit packages or multiunit packages with transparent or opaque packaging. If the quantities of the individual inner packages vary (which is allowed in Variety Packages) or, if the quantity of the individual inner packages is not declared, see Section 5.4. “Exceptions”.

Before determining the MAV and proceeding with tests of the quantity of contents in any multiunit package, calculate the sum of the labeled quantity statements of all individual inner packages and verify that the labeled Total Quantity Statement reflects the accurate sum. If an error exists between the sum of the labeled quantity statements of individual inner packages and the Total Quantity Statement, the package is not in compliance and shall be deemed in violation of labeling requirements of NIST Handbook 130 Uniform Packaging and Labeling Regulation, requiring an accurate summing and statement of total quantity. Do not test for net quantity determination.

5.3.1. Test Procedure for Multiunit Packages

1. Follow Section 2.3.1. “Define the Inspection Lot” to define the inspection lot (number of multiunit packages). Use the inspection lot size and select a “Category A” or “Category B” sampling plan (see Appendix A. “Tables”) in the inspection plan and select a random sample. (see Section 2.3.2. “Select Sampling Plans” and Section 2.3.4. “Random Sample Selection”).
2. For packages labeled by weight, determine the tare weight and nominal gross weight. Follow Section 2.3.5. “Procedures for Determining Tare” through Section 2.3.6. “Determine Nominal Gross Weight and Package Error” to determine package errors in the quantity of the individual inner packages as compared to the total package quantity declaration.
3. Determine the net quantity of each multiunit package and calculate the Total Quantity Package Error for each multiunit package.

The Total Quantity Package Error is the sum of the errors found in the individual inner packages.

$$\textit{Total Quantity Package Error} = \textit{Sum of Individual Inner Package Errors}$$

If applicable, verify the count declaration of the individual inner packages. To determine the MAV for count, use Appendix A. Table 2-7. “MAV for Packages Labeled by Count.”

4. If minus Total Quantity package errors are found in the sample, use the MAV for the individual inner package labeled quantity. (see Section 1.2.4.1. “Total Quantity MAV for Multiunit and Variety Packages” and the appropriate MAVs in Appendix A “Tables”). Calculate the Total Quantity MAV to be applied to the total quantity of contents declaration as follows:

Total Quantity MAV = Number of Individual Inner Packages × MAV for Individual Inner Package Quantity

Note: A Total Quantity MAV is not required when the MAV to be applied is based on a percent of a labeled quantity of a multiunit or variety package.

- 5. The Total Quantity MAV is compared to each minus Total Quantity Package Error to determine if any errors are unreasonable (See Section 2.3.7.1. “MAV Requirement”).**
 - If the number of unreasonable errors exceeds the number allowed for the sample size the lot sample fails. (See Section 2.3.1. “Define the Inspection Lot” and Tables 2-1 or 2-2, Column 4).**

5.4. Exceptions for Multiunit Packages

5.4.1. Multiunit Packages with Only a Total Quantity Declaration

NIST Handbook 130, Uniform Packaging and Labeling Regulation (UPLR), Section 10.4. “Multiunit Packages” states that unlabeled individual packages not intended for individual retail sale are only required to declare a total quantity declaration (see Figure 2. Multiunit Package [three packages] with only a Total Quantity Declaration). While not required, UPLR, Section 10.4. “Multiunit Packages” does allow for multiunit packages to include an optional statement for the count of the individual inner packages despite their not being fully labeled or intended for individual retail sale.

<u>Floor Cleaner</u>	<u>Floor Cleaner</u>	<u>Floor Cleaner</u>
	<u>NET WEIGHT</u> <u>15 kg (33 LB)</u>	

Figure 2. Multiunit Package (three packages) with only a Total Quantity Declaration

5.4.1.1. MAV Application

When multiunit package label does not include a quantity statement for each individual inner package (e.g., only a total quantity appears) a Total Quantity MAV cannot be applied because the quantities in the individual inner packages are unknown. In this case, the MAV value for the total quantity declaration as listed in the MAV tables (See Appendix A. Tables) is compared to the Total Quantity Package Error to determine if any package errors are unreasonable (see Section 2.3.7.1. “MAV Requirement”).

5.4.2. Variety Packages: Non-Uniform Quantity Declarations

UPLR, Section 10.6. “Variety Packages” states that a variety package is required to have total quantity declaration. The commodities may be generically similar; however, they can differ in weight, measure, volume, or style variation (e.g., color, flavor, scent, etc.). When the labeled weight, measure or count varies, the value of the applicable MAV can also vary.

When variety packages are tested, the procedure used to calculate a Total Quantity MAV requires the summing of the MAV values over the number of inner packages of all types. An example is shown in Figure 3. Variety Package – Four Similar but Different Products with Varying Net Weights) to illustrate a total quantity declaration, count, and the weight of the individual inner packages.)

<u>30 Candy Bar – Variety Pack</u> <u>Total Net Weight 1.33 kg (2.9 LB)</u>	
<u>10 – 55 g (1.9 oz)</u> <u>Peanut Butter Cups</u>	<u>6 – 30 g (1.1 oz)</u> <u>Dark Chocolate Bars</u>
<u>6 – 46 g (1.6 oz)</u> <u>Milk Chocolate Bars with Almonds</u>	<u>8 – 41 g (1.5 oz)</u> <u>Milk Chocolate Bars</u>

Figure 3. Variety Package – Four Similar but Different Products with Varying Net Weights

5.5. Test Procedure for Variety Packages Containing Individual Packages with Varying Net Weights

Before determining the MAV and proceeding with tests of the quantity of contents in any variety package, calculate the sum of the labeled quantity statements of all individual inner packages and verify that the labeled Total Quantity Statement reflects the accurate sum. If an error exists between the sum of the labeled quantity statements of all individual inner packages and the Total Quantity Statement, the package is not in compliance and shall be deemed in violation of labeling requirements of NIST Handbook 130 Uniform Packaging and Labeling Regulation, requiring an accurate summing and statement of total quantity. Do not test for net quantity determination.

- 1. When a variety package with individual inner packages with varying net weights is tested, the average tare weight (e.g., packaging from the individual inner packages and the outer package combined) is determined and a nominal gross weight is used to determine the error in the total quantity declaration.**

$$\text{Total Quantity Package Error} = \text{Sum of Individual Inner Package Errors}$$

Note: Example is based on Weight (see Figure 3. Variety Package – Four Similar but Different Products with Varying Net Weights)

$$\text{Nominal gross weight} = \text{average tare weight} + \text{labeled weight}$$

$$\text{Package error} = \text{gross weight} - \text{nominal gross weight}$$

MAVs used in calculating the Total Quantity Package MAV are based on the respective labeled quantities of each product type and are calculated for each product type within the variety package. The calculated MAVs for each of the product types are summed to obtain the Total Quantity MAV (See example shown in Table 1. Steps in Calculating a MAV for a Variety Package).

5.6. MAV Application

A Total Quantity MAV must be applied because the labeled quantities and MAVs of the individual inner packages vary. For example, based on the quantity of the total net weight (as shown in Figure 3. Variety Package- Four Similar but Different Products with Varying Net Weights) the MAV for 1.33 kg (2.9 LB) is 42.6 g (0.094 LB) but the “Total Quantity MAV” to be applied is 122.4 g (4.261 oz) (0.27 lb)(See example shown in Table 1. Steps in Calculating a MAV for a Variety Package).

<u>Table 1. Steps in Calculating a MAV for a Variety Package</u> <u>(Based on Figure 3. Variety Package – Four Similar but Different Products with Varying Net Weights)</u>				
<u>Product</u>	<u>Number of Inner Packages</u>	<u>Labeled Net Weight (each individual inner package)</u>	<u>MAV for each Individual Inner Package Based on the Labeled Net Quantity (see MAV Table 2-5)</u>	<u>Total MAV</u>
<u>Peanut Butter Cups</u>	<u>10</u>	<u>55 g (1.94 oz)</u>	<u>5.4 g (0.1875 oz)</u>	<u>$10 \times 5.4 = 54 \text{ g}$</u> <u>$(10 \times 0.1875 \text{ oz} = 1.875 \text{ oz})$</u>
<u>Dark Chocolate Bars</u>	<u>6</u>	<u>30 g (1.06 oz)</u>	<u>10 % of labeled quantity</u>	<u>$6 \times (0.1 \times 30) = 18 \text{ g}$</u> <u>$6 \times (0.1 \times 1.06 \text{ oz}) = 0.636 \text{ oz}$</u>
<u>Milk Chocolate Bars</u>	<u>8</u>	<u>41 g (1.45 oz)</u>	<u>3.6 g (0.125 oz)</u>	<u>$8 \times 3.6 = 28.8 \text{ g}$</u> <u>$(8 \times 0.12 \text{ oz} = 1 \text{ oz})$</u>
<u>Milk Chocolate Bars with Almonds</u>	<u>6</u>	<u>46 g (1.62 oz)</u>	<u>3.6 g (0.125 oz)</u>	<u>$6 \times 3.6 = 21.6 \text{ g}$</u> <u>$(6 \times 0.125 \text{ oz} = 0.75 \text{ oz})$</u>
			<u>Total Quantity MAV</u>	<u>122.4 g</u> <u>(4.261 oz) (0.27 LB)</u>

(Added 20XX)

B1: NET-19.4 I Appendix F. Glossary**Purpose:**

This will add definitions for multiunit, variety and total quantity MAV into NIST Handbook 133 Appendix F.

Item Under Consideration:

Amend NIST Handbook 133, Appendix F as follows:

Multiunit Package. – A package containing two or more individual packages of the identical commodity, in the same quantity, intended to be sold as a multiunit package

Variety Package. – A package intended for retail sale, containing two or more individual packages or units of similar, but not identical, commodities. Commodities that are generically alike, but that differ in weight, measure, volume, or style variation (e.g., color, flavor, scent, etc.) are considered similar, but not identical.

Total Quantity MAV. – A calculated value used to determine if any minus Total Quantity Package Error found in a multiunit or variety packages is unreasonable. A Total Quantity MAV is based on the declared quantity and count of the individual inner packages. It is determined by obtaining the applicable MAV for each individual inner package quantity from the appropriate MAV table (refer to Appendix A, “Tables” and then calculating the “Total Quantity MAV” as follows:

- **Multiunit Package: $Total\ Quantity\ MAV = Number\ of\ Individual\ Inner\ Packages \times MAV\ for\ Individual\ Inner\ Package\ Quantity$**

- **Variety Package: Total Quantity MAV = The sum of the applicable MAVs for all Individual Inner Packages.**

Note: A Total Quantity MAV is not used when the MAV applied is based on a percentage of the labeled quantity on a multiunit or variety package

Note: Total Quantity Package Error = Sum of Individual Inner Package Errors.

Background/Discussion:

This item was originally submitted and developed by:

Ms. Lisa Warfield
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When current test procedures in NIST Handbook 133 are used and an MAV is applied to the total quantity declaration on some multiunit and variety packages the MAV allowed for the individual inner packages can indirectly be reduced as much as 50 % or more, depending on the number of individual items in the package. This proposal modifies NIST Handbook 133 to add language regarding the total quantity declaration on multiunit or variety packages, when the MAV may need to be recalculated based on the Total Quantity MAV.

When a total quantity declaration on a multiunit or variety package is verified it will require the inspector, except when the MAV is based on a percentage of the labeled quantity, to calculate and use a “Total Quantity MAV.” This calculation will determine if minus package errors are unreasonable (an unreasonable error is a minus package error that exceeds an MAV specified in the proper table of MAVs in NIST Handbook 133, Appendix A. “Tables”). A “Total Quantity MAV” is calculated by multiplying the number of individual inner packages by the MAV value, which is based on the declared quantity of the individual inner packages. It is found by looking up the MAV for the individual inner package quantity (See HB 133, Appendix A. “Tables”) and then calculating the “Total Quantity MAV.” This test procedure will be used to assist inspectors with their inspection.

At the 2019 NCWM Interim Meeting, comments were heard recognizing the merit of this item. Several regulators and an industry member made comments that some areas within the test procedure are too confusing. Mr. Tim Chesser (Arkansas) remarked that he does not understand Item Net 3. Section 5.4.1.1. MAV Application. Mr. Kurt Floren (Los Angeles County, California) submitted editorial changes. The Committee accepted these revisions for the entire Item Block 1. In addition, the Committee would like NIST OWM to address Mr. Floren’s comments for Item NET-3. Chapter 5. Specialized Test Procedures will be reviewed by the NIST OWM. Due to the Federal Government furlough, NIST OWM was not in attendance, so concerns could not be addressed at the meeting. The Committee would like the submitter to review formatting, clarifying label quantity, and modifying language for additional clarity. The Committee would like to see the above issues reviewed by the submitter and encourages further development.

At the 2019 NCWM Annual Meeting, Ms. Warfield stressed to membership that this item is fully developed and a technical document and supporting data was submitted that supports these proposals. The document also provides for examples that inspectors found pertaining to multi-unit and variety packages during inspections. NIST also addressed the WWMA comments in the latest Item under Consideration. There were no additional comments heard at the Annual Meeting.

At the 2020 NCWM Interim Meeting Open Hearings, an update on the last language submitted for this item on December 27, 2019 was provided by Ms. Warfield. She remarked the work done to develop the proposal and clarify the procedure language. Ms. Warfield reminded the audience NET-19.3 creates a Chapter 5, “Specialized Test Procedures” must be approved for the rest of the items in the block to proceed. This block of items was submitted by OWM after some states requested assistance inspecting these types of packages. Mr. Chris Guay (Procter and Gamble Co.) gave merit to the item but requested review of the definition of “multiunit package” and made reference to the definition in CFR 21. Mr. Floren expressed his support for the item but pointed out some punctuation and editorial changes were needed. He said wording in Section 5.4.3 can be improved for clarity. Ms. Ann Boeckman (Kraft Heinz Foods Co.) also expressed concerns about the definition of multiunit package for retail sale. Opinions from Ms.

Angela Godwin (Ventura County, California) and Ms. Katherine De Contreras (California) were heard during the open hearing; both agreed the procedure is confusing and needs additional work but, both concur the item has merit.

There were concerns that membership may not have reviewed the modifications submitted by NIST OWM in December 2019. There was some confusion as to whether members comments were still valid since they did not review the latest language. All comments received gave merit to the blocked Item, but some still expressed concern about the definitions of multiunit packages for retail sale and others found the language of the procedure to be confusing. Based on the comments, the L&R Committee would like the submitter to review possible issues with the definition of “multiunit packages” and to work on the procedure language to improve clarity. The L&R Committee recommends the Item Block 1 be Informational to allow the submitter to do an additional review.

At the 2021 NCWM Interim Meeting, Mr. Floren expressed concerns that the language in certain areas of B1: NET-19.1 and B1: NET-19.3 could use some clarity. He also recommends that the Committee consider adding in additional information directing the user to the federal regulations for USDA/FSIS and FDA for packaged foods for human consumption.

Ms. Warfield remarked there is a supporting document that provides the varying definitions for multiunit from FTC, FDA, and USDA regulations. The Committee does have a copy to assist them in deciding to how to proceed with this block. She expressed concern that at NCWM and regional meetings there is not specific feedback as to what is required to get this item voting status. NIST OWM has provided all supporting data and technical papers to explain how this information was developed. She suggested that if the Committee is unable to elevate this to voting status then they should withdraw it and NIST would incorporate this procedure within their NIST HB133 training courses.

Mr. Floren and Ms. Warfield agreed to work in preparing Mr. Floren’s recommendations for acceptance and incorporation into the reporting.

The following recommendations that reflected with either a double underscore or double strikethrough:

B1: NET-19.1. changes:

1.2.4. Maximum Allowable Variation

The limit of the “reasonable minus variation” for an underfilled package is called a “Maximum Allowable Variation” (MAV). An MAV is a deviation from the labeled weight, measure, or count of an individual package beyond which the deficiency is considered an unreasonable minus error. Each sampling plan limits the number of negative package errors permitted to be greater than the MAV.

Packages may be offered for sale individually or offered for sale in multiunit packages or variety packages, which contain two or more individual inner packages.

When ~~individual~~ packages are tested whether individual, multiunit, or variety packages, the MAV is applied to each package in the sample which has a minus package error.

Add a paragraph to make it clear to the inspector how to handle a package that is not in compliance and due to a Packaging and Labeling Regulation violation

Before determining the MAV and proceeding with tests of the quantity of contents in any multiunit or variety package, calculate the sum of the labeled quantity statements of all individual inner packages and verify that the labeled Total Quantity Statement reflects the accurate sum. If an error exists between the sum of the labeled quantity statements of individual inner packages and the Total Quantity Statement, the package is not in compliance and shall be deemed in violation of labeling requirements of NIST Handbook 130, Uniform Packaging and Labeling Regulation, requiring an accurate summing and statement of total quantity. Do not test for net quantity determination.

1.2.4.1. Total Quantity MAV for Multiunit and Variety Packages (See Chapter 5. “Specialized Test Procedures”)

- a. **Multiunit Package. – In verifying a total quantity declaration that appears on a multiunit package, compare a Total Quantity MAV to each minus Total Quantity Package Error to determine if the error is unreasonable. Calculate the Total Quantity MAV using the following formula:**
- b. **Variety Package. – In verifying a total quantity declaration that appears on a variety package, compare a Total Quantity MAV to each minus Total Quantity Package Error to determine if the error is unreasonable. Calculate the Total Quantity MAV using the following formula:**

Total Quantity MAV = The sum of the applicable MAVs for all Individual Inner Packages

Variety packages include commodities that may be generically similar, but differ in weight, measure, volume, or appearance design variation (e.g., color, flavor, scent, etc.). For these packages, a Total Quantity MAV is calculated for each product type within the variety package and the results are added to obtain a Total Quantity MAV for comparison to each minus Total Quantity Package Error.

Changes to B1: NET-19.3 are reflected below:

5.1. Scope

The following procedures are used in either verifying the net quantity of contents of retail multiunit packages with individual inner packages of the same commodity that have identically-labeled quantities or in verifying retail variety packages with individual inner packages that differ in labeled weight, measure or volume.

1. The procedure used is determined by using the labeled net contents.

- **Use Section 5.2. “Individual Package Quantity” if a total net quantity of contents is not declared on the label of a multiunit or variety package of food for human consumption or meat or meat products from a USDA official establishment (See explanation in Section 5.2. of specific exemptions to requirement for a total net quantity statement).**
- **Use Section 5.3. “Total Quantity” if a total net quantity of contents is declared on the package.**

Note: If the packages are labeled with additional quantity statements (i.e., dry volume, area, length, width, or thickness), added steps or, when proper, additional Total Quantity MAVs may be required in testing the accuracy of such additional quantity statements.

Changes to Section 5.2. will add additional language to clarify how to inspect packaged foods for human consumption. The CFR citations are hyperlinked to provide the inspector direct access to the CFR information if they are using an online handbook.

5.2. Individual Package Quantity

This procedure is used only for verifying the total content statement of open or transparent-wrapped multiunit packages of foods for human consumption or meat or meat products under the authority of FDA or USDA, respectively. Under USDA FSIS regulations (9 CFR 317.2 [h][12]) and FDA regulations (21 CFR 101.7 Chapter I [s]), such open multiunit packages that do not obscure the number of individual inner packages or the labeling of each individual inner package (compliant with all other location, type size, and applicable requirements) are not required to bear a total net quantity statement on the outside of the package (see Figure 1. Open or Transparent Multiunit Package with Fully Visible Individual Quantity Declarations).

The capture for Figure one should be clarified to read, Figure 1. Open or Transparent Multiunit Package (containing two rows of packages) with Fully Visible Individual Quantity Declarations

5.2.1. Test Procedure for Multiunit Packages Exempt from Total Quantity Statement (See Section 5.2)

Step 4 in this section should be clarified to read: If minus package errors are found in the sample, the value of the MAV to be applied is determined by matching the labeled net quantity for the individual inner packages to the applicable value in the appropriate MAV table (see Appendix A “Tables”).

Add a statement to Section 5.3. Total Quantity to make it clear to the inspector how to handle a package that is not in compliance and due to a Packaging and Labeling Regulation violation

Before determining the MAV and proceeding with tests of the quantity of contents in any multiunit package, calculate the sum of the labeled quantity statements of all individual inner packages and verify that the labeled Total Quantity Statement reflects the accurate sum. If an error exists between the sum of the labeled quantity statements of individual inner packages and the Total Quantity Statement, the package is not in compliance and shall be deemed in violation of labeling requirements of NIST Handbook 130 Uniform Packaging and Labeling Regulation, requiring an accurate summing and statement of total quantity. Do not test for net quantity determination.

5.4. Exceptions for Multiunit Packages

5.4.1. Multiunit Packages with Only a Total Quantity Declaration

NIST Handbook 130, Uniform Packaging and Labeling Regulation (UPLR), Section 10.4. “Multiunit Packages” states that when containing unlabeled individual packages and not intended for individual retail sale, the multiunit package only requires a total quantity declaration (see Figure 2. Multiunit Package [three packages] with only a Total Quantity Declaration). While not required, UPLR, Section 10.4, “Multiunit Packages” does allow for multiunit packages to include an optional statement for the count of the individual inner packages despite their not being fully labeled or intended for individual retail sale even when the UPLR, Section 10.4, “Multiunit Packages” regulations do not require such a statement.

5.5. Test Procedure for Variety Packages Containing Individual Packages with Varying Net Weights

When a variety package with individual inner packages of varying net weights is tested, the average tare weight (e.g., packaging from the individual inner packages and the outer package combined) is determined and a nominal gross weight is used to determine the error in the total quantity declaration.

Changes for B1: NET-19. 4 appear below

Multiunit Package. – A package containing two or more individual packages of the identical commodity, in the same quantity, intended to be sold as a multiunit package

Variety Package. – A package intended for retail sale, containing two or more individual packages or units of similar, but not identical, commodities. Commodities that are generically alike, but that differ in weight, measure, volume, appearance or style variation (e.g., color, flavor, scent, etc.) or quality, are considered similar, but not identical.

Total Quantity MAV. – A calculated value used to determine if any minus Total Quantity Package Error found in a multiunit or variety package is unreasonable. A Total Quantity MAV is based on the declared quantity and count of the individual inner packages. It is determined by obtaining the applicable MAV for each individual inner package quantity from the appropriate MAV table (refer to Appendix A. “Tables”) and, then, calculating the “Total Quantity MAV” as follows:

- **Multiunit Package:**
 $Total\ Quantity\ MAV = Number\ of\ Individual\ Inner\ Packages \times MAV\ for\ Individual\ Inner\ Package\ Quantity$
- **Variety Package:**
 $Total\ Quantity\ MAV = The\ sum\ of\ the\ applicable\ MAVs\ for\ all\ Individual\ Inner\ Packages$

Several regulators spoke in support of having this item further developed based upon Mr. Floren's comments. They persuaded the Committee from removing any of the Items from the Block that were deemed fully developed and ready for Voting status. This will allow the item to move forward together since the language impacts the various sections.

Mr. Guay (retired) does like the intent of the proposal but struggles with removing language from the definition of a multiunit package because the definition is well understood by industry. Mr. Ed Coleman (Tennessee) remarked that this test procedure appears to be a very involved process and questioned if this could only be done in a point of pack. Mr. Coleman remarked their state would normally do an audit test at retail locations and he is unsure how practical this procedure is.

During the Committee work session, there was limited time for the Committee to revise the language. The Committee approved the recommendations addressed by Mr. Floren and NIST will be incorporated into the Item under Consideration. The Committee is also recommending the language remain as Informational status to obtain feedback from the Regional Associations.

At the 2021 NCWM Annual Meeting, Mr. Floren provided a few minor editorial changes within the entire block, with those changes he does support. He did request that the Committee review B1: NET-19.3, Section 5.5.1., the equation is not accurate. At the Committee work session Ms. Warfield provided a correction to the language in Section 5.5.1. The current Item under Consideration was modified to include editorial changes and to clarify the equation under Section 5.5.1.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the WWMA 2019 Annual Meeting, Mr. Floren commented that he submitted his changes to the language to NIST OWM. Ms. Warfield (NIST OWM) will immediately forward to the three upcoming regional meetings, the updated language presented at the WWMA for inclusion in their regional reports. Based off comments heard, the WWMA supports the concept of this item and encourages NIST to include changes presented at the WWMA in developing this item. The Committee recommends this item remain a Developing item.

At the SWMA 2019 Annual Meeting, it was noted that in B1:NET 19.1. Section 1.2.4. Maximum Allowable Variation a sentence appears twice in the report. The language appearing with double strikethrough below should be removed.

1.2.4. Maximum Allowable Variation

The limit of the "reasonable minus variation" for an under filled package is called a "Maximum Allowable Variation" (MAV). An MAV is a deviation from the labeled weight, measure, or count of an individual package beyond which the deficiency is considered an unreasonable minus error. ~~Each sampling plan limits the number of negative package errors permitted to be greater than the MAV. unreasonable minus error.~~ Each sampling plan limits the number of negative package errors permitted to be greater than the MAV. Packages are offered for sale individually or in multiunit packages which may contain two or more individual inner packages. When individual packages are tested the MAV is applied to each package in the sample which has a minus package error. When a total quantity declaration on a multiunit or variety package is verified, and the MAV is not determined in terms of a percent of the labeled quantity, a "Total Quantity MAV" is compared to the minus Total Quantity Package Error(s) to determine if they are unreasonable.

In B1: NET-19.2. the header title needs to be amended to include 2.7.3. “Evaluation Results.”

The SWMA is recommending that the submitter review the language for clarity. In Item B1:NET-19.3 Section 5.1. Scope the first sentence needs to be broken into separate sentences for clarity.

The Committee does believe this item has merit. The Committee is requesting that the submitter continue to work to simplify the test procedure. The Committee does not believe it is necessary to have Section 5.2. Individual Package Quantity. For the reasons mentioned above the Committee is recommending this as a Developing item.

At the NEWMA 2019 Interim Meeting, there were no comments heard during open hearings. The Committee believes this item needs further vetting through the regions and PALS should continue to develop these items.

At the 2021 NEWMA Annual Meeting, Ms. Warfield commented that she is working with Mr. Floren and believes this item is fully developed and should be moved to voting status for consideration by the Fall 2021 Regional meetings. Ms. Warfield requested and encouraged comments prior to the fall regional meeting. The Committee believes it should be moved to Voting status for consideration in the fall.

At the CWMA 2020 Interim Meeting, Ms. Warfield commented that this item has been on the agenda since 2019. She said that during development of this item, the only input received was a comment regarding the term multiunit retail, which NIST does not object to. Ms. Warfield explained that federal agencies have different definitions for the term “multiunit.” She wants to get any additional feedback to be sure the language is clear, concise, and fully vetted. The Committee believes this item is fully developed and is ready for Voting status.

At the CWMA 2021 Annual Meeting, Ms. Warfield thanked all the commenters. Ms. Warfield said this item has been on the agenda since 2019 and indicated the language in this agenda has captured all the comments and changes to date which includes all concerns and issues addressed from past meetings. The background information has been fully updated. The Committee believes that the item has been fully developed but will be revisited at the 2021 CWMA Interim Meeting. This comment encompasses all of Block 1.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/newm-annual-reports to review these documents.

PAL – UNIFORM PACKAGING AND LABELING REGULATION

PAL-21.1 V Section 11.34. Bacon and 11.19. Margarine

(This item was Adopted.)

Source:

NIST Office of Weights and Measures

Purpose:

Add language for shingle sliced packed bacon to align with USDA Labeling requirements, 9 CFR § 317.2 - Labels: definition; required features.

Item Under Consideration:

Amend NIST Handbook 130, Uniform Packaging and Labeling Regulation as follows:

11.34. Bacon – Bacon packaged as sliced shingles in rectangular packages shall be exempt from the requirement in this regulation for location (see Section 8.1.1. Location) of the net quantity declaration. The statement of net quantity shall appear in a clear and conspicuous manner on the principal display panel. (see 9 CFR 317.2)

(Added 2021)

11.19. Margarine. – Margarine in 1 lb rectangular packages, except for packages containing whipped or soft margarine or packages containing more than four sticks, shall be exempt from the requirement in this regulation for location (see Section 8.1.1. Location) of the net quantity. **The statement of net quantity shall appear in a clear and conspicuous manner on the principal display panel. (see 9 CFR 317.2)**

(Amended 1978, **and** 1993, **and 2021**)

Original Justification:

This will align the NIST Handbook 130 model regulation with USDA/FSIS requirements for labeling of sliced shingle packaged bacon as referenced in 9 CFR § 317.2 - Labels: definition; required features. It states:

(v) Sliced shingle packed bacon in rectangular packages is exempt from the requirements of paragraphs (h)(3) and (h)(5) of this section regarding the placement of the statement of the net quantity of contents within the bottom 30 percent of the principal display panel, and that the statement be expressed both in ounces and in pounds, if the statement appears in a conspicuous manner on the principal display panel.



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Example of Sliced Shingle Packed Bacon

The submitter requested Voting status for this Item in 2021.

Arguments in Favor:

Regulatory:

- Many regulators voiced their support for this item so that the handbook aligns with federal regulations.
- Regulators also support the inclusion for the changes to Section 11.19. Margarine.

Industry:

- None heard

Advisory:

- Ms. Warfield (NIST OWM) informed membership that NEWMA and CWMA were the only two regions to discuss Section 11.19. Margarine and they were both in full support.

Item Development:

N/A

Background/Discussion:

The Committee heard support to move both the bacon and margarine together as one item. There were no comments heard in opposition. There is no conflict with this language since it is extracted from a federal CFR. The Committee recommended the original item under consideration be also include the language modification for Section 11.14. Margarine.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the WWMA 2020 Annual Meeting, Ms. Lisa Warfield (NIST OWM, submitter) provided testimony as to the purpose of this proposal, which is to harmonize NIST Handbook 130 model regulation pertaining to labeling of sliced shingle packaged bacon with USDA/FSIS requirements. The Committee received comments from Mr. Kurt Floren (Los Angeles County, California), indicating that while he sees the need for alignment with USDA regulations, he also believes it is important to retain the requirement that the net quantity declaration appear in a conspicuous manner on the principal display panel.

The WWMA L&R Committee recommended this as a Voting item provided the additional language, indicated by a double underline below, is added.

11.XX. Bacon – Bacon packaged as sliced shingles in rectangular packages shall be exempt from the requirement in this regulation for location (see Section 8.1.1. Location) of the net quantity declaration. However, such exemption shall not apply to the requirement for the net quantity declaration to appear in a conspicuous manner on the principal display panel.

At the SWMA 2020 Annual Meeting, Ms. Warfield remarked that they submitted this proposal to add the USDA labeling requirements for bacon to NIST HB130, UPLR. If adopted, this language would appear in Section 11. Exemptions. When drafting this proposal, the exemption for bacon was only for the location (UPLR, Section 8.1.1.). We were not exempting bacon from UPLR, Sections 8.1.2. and 8.1.3. that requires the net quantity to be conspicuous. The bacon language mirrors the language found for margarine under Section 11.19. Both margarine and bacon exemptions are found within 9 CFR 317.2. If the Committee agrees language for conspicuous needs to be addressed, NIST OWM recommends adding a sentence “The statement of net quantity shall be clear and conspicuous on the principal display panel.” (refer to 9 CFR 317.2). The Committee received comments from Mr. Tim Chesser (Arkansas) in support the alternative language to include the terms clear and conspicuous.

Comments were received from Ms. Elizabeth Koncki (Maryland) requesting clarification where the proposal was going, and she preferred to add the conspicuous language.

The SWMA L&R Committee recommends this as a Voting item provided the additional language, indicated by a double underline below, is added.

11.XX. Bacon – Bacon packaged as sliced shingles in rectangular packages shall be exempt from the requirement in this regulation for location (see Section 8.1.1. Location) of the net quantity declaration. The statement of net quantity shall be clear and conspicuous on the principal display panel. (see 9 CFR 317.2)

At the NEWMA 2020 Interim Meeting, Ms. Warfield worked with Mr. Floren on updating the language in the proposal. The modified language was submitted for consideration by the Committee. It was requested that the Committee should also apply the same language to margarine. These changes would align language with USDA’s CFR. The Committee concurred and recommends that the updated proposal as shown below, be a Voting item.

11.XX. Bacon – Bacon packaged as sliced shingles in rectangular packages shall be exempt from the requirement in this regulation for location (see Section 8.1.1. Location) of the net quantity declaration. The statement of net quantity shall appear in a clear and conspicuous manner on the principal display panel. (see 9 CFR 317.2)

11.19. Margarine. – Margarine in 1 lb rectangular packages, except for packages containing whipped or soft margarine or packages, containing more than four sticks, shall be exempt from the requirement in this regulation for location (see Section 8.1.1. Location) of the net quantity. **The statement of net quantity shall appear in a clear and conspicuous manner on the principal display panel. (see 9 CFR 317.2)**

At the 2021 NEWMA Annual Meeting, there were no comments heard during open hearings, and both New York and New Jersey support this item.

At the CWMA 2020 Interim Meeting, Ms. Warfield commented that this item is intended to reaffirm that UPLR Section 11.19. Margarine should have the same language that was accepted by NEWMA, which will align language with USDA's CFR. The Committee discussed the option of adding Section 11.19. Margarine to the Item title in the report and suggested the NCWM L&R Committee make an editorial change to reflect Section 11.19. Margarine. Based on Committee discussion, the item is fully developed and ready for Voting status.

11.XX. Bacon ☐ Bacon packaged as sliced shingles in rectangular packages shall be exempt from the requirement in this regulation for location (see Section 8.1.1. Location) of the net quantity declaration. The statement of net quantity shall appear in a clear and conspicuous manner on the principal display panel. (see 9 CFR 317.2)

11.19. Margarine. –☐Margarine in 1 lb rectangular packages, except for packages containing whipped or soft margarine or packages, containing more than four sticks, shall be exempt from the requirement in this regulation for location (see Section 8.1.1. Location) of the net quantity. **The statement of net quantity shall appear in a clear and conspicuous manner on the principal display panel. (see 9 CFR 317.2)**

At the 2021 CWMA Annual Meeting, Ms. Warfield commented that this is a cleanup item to align with federal regulations. Mr. Loren Minnich (Kansas) concurred this item is fully developed and ready for Voting status

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports to review these documents.

MOS – UNIFORM REGULATION FOR THE METHOD OF SALE OF COMMODITIES

MOS-20.3 VC Section 2.40. Diesel Fuel

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert's Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

Source:

National Biodiesel Board

Purpose:

Add the recently approved language for premium diesel into the section (B) for method of sale.

Item Under Consideration:

Amend NIST Handbook 130 Uniform Regulation for the Method of Sale of Commodities as follows:

2.40. Diesel Fuel. – Shall meet the following requirements, based on the biodiesel concentration of the fuel:

(a) Diesel fuel that contains less than or equal to 5 % by volume biodiesel shall meet the latest version of ASTM D975, "Standard Specifications for Diesel Fuels" and shall be sold as diesel fuel.

(b) Diesel fuel that contains greater than or equal to 6 % by volume biodiesel and that contains less than or equal to 20 % by volume shall meet the latest version of ASTM D7467, “Standard Specifications for Diesel Fuel Oil, Biodiesel Blend (B6 to B20).”

(c) Only fuel additive registered with the U.S. EPA may be used to additize diesel fuel, and the final product shall meet the latest version of ASTM D975 and/or ASTM D7467.

2.40.1. Premium Diesel Fuel. – All diesel fuels identified on retail dispensers as premium, super, supreme, or premier must conform to the following minimum requirements.

(a) Cetane Number. – A minimum cetane number of 47.0 as determined by the latest version of ASTM D613, “Standard Test Method for Cetane Number of Diesel Fuel Oil.”

NOTE: ASTM D613, “Standard Test Method for Cetane Number of Diesel Fuel Oil” is the referee method; however, the following methods can be used to determine cetane number: the latest version of ASTM D6890, “Standard Test Method for Determination of Ignition Delay and Derived Cetane Number” (DCN) of Diesel Fuel Oils by Combustion in a Constant Volume Chamber”; and ASTM D7668, “Standard Test Method for Determination of Derived Cetane Number (DCN) of Diesel Fuel Oils–Ignition Delay and Combustion Delay Using a Constant Volume Combustion Chamber Method.”

(b) Low Temperature Operability. – A cold flow performance measurement which meets the latest version of ASTM D975, “Standard Specification for Diesel Fuel,” tenth percentile minimum ambient air temperature charts and maps by the latest version of either ASTM D2500, “Standard Test Method for Cloud Point of Petroleum Products and Liquid Fuels” or ASTM Standard D4539, “Standard Test Method for Filterability of Diesel Fuels by Low-Temperature Flow Test (LTFT).” The latest version of ASTM D6371, “Standard Test Method for Cold Filter Plugging Point of Diesel and Heating Fuels” may be used when the test results are a maximum of 6 °C below the Cloud Point. Low temperature operability is only applicable October 1 to March 31 of each year.

(c) Lubricity. – A maximum wear scar diameter of 460 micrometers as determined by the latest version ASTM D6079, “Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR).”

NOTE: The latest version of ASTM D6079, “Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR)” is the referee method; however, the latest version of ASTM D7688, “Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR) by Visual Observation” can be used.

(d) Corrosion. – A minimum rating of B+ as determined by the most recent version of NACE TM0172, “Determining Corrosive Properties of Cargoes in Petroleum Product Pipelines.”

NOTE: The latest recent version of NACE TM0172 “Determining Corrosive Properties of Cargoes in Petroleum Product Pipelines” is the referee method. The latest version of ASTM D7548 “Standard Test Method for Determination of Accelerated Iron Corrosion in Petroleum Products” can be used.

(e) Filter Blocking Tendency (FBT) – A maximum of 2.2 by the latest version of ASTM D2068, “Standard Test Method for Determining Filter Blocking Tendency”, following procedure B.

(f) Injector Deposit Control. – Maximum power loss in keep-clean mode of 2 % by the latest version of Coordinating European Council, CEC F-98-08, “Direct Injection, Common Rail Diesel Engine Nozzle Coking Test.”

2.40.2. Use of Other Diesel Terminology. – For any terms other than premium, super, supreme, or premier included in the diesel fuel product or grade name and/or advertisements and claims displayed on dispensers, pump toppers, pole signs and bollard signs which imply improved performance, the product must have a clearly-defined fuel property with a substantiated functional benefit. Such property must be measurable utilizing industry accepted test methodologies developed by recognized standards organizations such as ASTM, SAE, and CEC to allow verification of the improved performance.

(Added 2021)

Background/Discussion:

Nearly all the text that appears in the item under consideration was adopted into the Uniform Fuels and Automotive Lubricants Regulation at the 2019 NCWM Annual Meeting without opposition from an amendment submitted by multiple organizations. This proposal adds this section and verbatim text to the Uniform Regulation for the Method of Sale of Commodities. This section is adopted by more states and will improve the uniformity of implementing the important, amended concept. The amendment on “Premium Diesel Fuel” within the Fuels and Automotive Lubricants Regulation passed without opposition at the 2019 NCWM Annual Meeting.

At the 2020 NCWM Interim Meeting, the Committee heard from the submitter that ASTM 7170, “Standard Test Method for Determination of Derived Cetane Number (DCN) Of Diesel Fuel Oils-Fixed Range Injection Period, Constant Volume Combustion Chamber Method” is an obsolete standard and should be stricken from the language. In addition, the word “oil” should be removed within the ASTM D975 standard title. FALS Chair Striejewski concurred with these two edits. The Committee was previously aware of these edits and concurred the item is ready for a Vote.

At the 2020 NCWM Annual Meeting, the Committee heard comments from industry members and regulators alike, they were in support of this item. There have been no changes to the language since the 2020 NCWM Interim Meeting.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the 2019 WWMA Annual Meeting, Ms. Rebecca Richardson (NBB) spoke in support of this item. This proposal will place the same language that is in the Fuels and Lubricants regulation into the Method of Sale regulation. The Committee believes this item is fully developed and ready for a Vote.

At the 2019 SWMA Annual Meeting, the Committee concurred with this item under consideration and recommends this as a Voting item.

At the 2019 NEWMA Interim Meeting, Ms. Richardson commented that this language is identical to the language that was added to NIST Handbook 130, Engine Fuels Regulation during the 2019 NCWM Annual Meeting. She stated that two reasons to put the identical language into the Method of Sale Regulation is that more states adopt that Regulation, and several aspects of the new language specifically pertains to the method of sale of premium diesel fuel. Several regulators supported the proposal. The Committee believed this item was fully developed and ready for Voting status.

At the 2019 CWMA Interim Meeting, Mr. Scott Fenwick (NBB and submitter) commented that this is identical to the language that was adopted during the last cycle, regarding the definition and details for sale of premium diesel. Since more states adopt the NIST Handbook 130, Method of Sale than the Fuels and Automotive Lubricants Regulation, Mr. Fenwick believed the model language should appear in both regulations. The Committee believed this item was fully developed and ready for Voting status.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports to review these documents.

MOS-20.5 V Section 2.21. Liquefied Petroleum Gas

(Returned to the Committee)

Source:

Arizona Department of Agriculture, Weights and Measures Services Division

Purpose:

Provide clarity and consistency regarding the method of sale (MOS) for liquefied petroleum gas (LPG) through a meter that has a maximum rated capacity of 20 gal/min or less.

Item Under Consideration:

Amend NIST Handbook 130, Uniform Regulation for the Method of Sale of Commodities, as follows:

2.21. Liquefied Petroleum Gas.

2.21.1. Method of Sale. – All liquefied petroleum gas, including, but not limited to propane, butane, and mixtures thereof, shall be kept, offered, exposed for sale, or sold by the following methods of sale. If kept, offered, exposed for sale, or sold by:

- (a) **Weight:** by the kilogram or pound; or by,
- (b) **Gaseous Volume:** by the metered cubic meter of vapor (defined as 1 m³ at 15 °C); or metered cubic foot of vapor (defined as 1 ft³ at 60 °F) [See *Section 2.21. Note*]; or by,
- (c) **Liquid:** by the liter (defined as 1 liter at 15 °C) or the gallon (defined as 231 in³ at 60 °F). All-metered sales by the or gallon, except those using meters with a maximum rated capacity of (20 gal)/min or less, shall be accomplished by use of a meter and device that automatically compensates for temperature.

2.21.2. Metered Sales by Liquid Volume. – All metered sales by liquid volume shall be accomplished using metering systems as follows:

- (a) Sales using metering systems with a maximum rated capacity equal to or greater than 20 gal/min shall be accomplished by the use of a metering system that automatically compensates for the effects of temperature.
- (b) Sales using metering systems with a maximum rated capacity less than 20 gal/min that were placed into service after January 1, 2024 shall be accomplished by use of a metering system that automatically compensates for the effects of temperature.
- (c) Effective January 1, 2030, all metered sales (through all capacities of metering devices, regardless of installation and service date) shall be accomplished by use of a metering system that automatically compensates for temperature.

Section 2.21. NOTE: Sources: ~~American National Standards Institute, Inc., ANSI B109.1 (2008/2000)~~, “~~American National Standard For Diaphragm-Type Gas Displacement Meters (14.16 Cubic Meters [Under 500 Cubic Feet] Per Hour Capacity and Under)~~,” and NIST Handbook 44, “Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices.”

(Added 1986, Amended 20XX)

Background/Discussion:

There appears to be a lack of clarity and consistency regarding the method of sale (MOS) for liquefied petroleum gas (LPG) through a meter that has a maximum rated capacity of 20 gal/min or less. The Uniform Regulation for the Method of Sale of Commodities, Section 2.2. Liquefied Petroleum Gas specifically exempts these meters from the use of automatic temperature compensation but defines a gallon as 231 in³ at 60 °F [15.6 °C]. With this definition, it can

be interpreted that, while automatic temperature compensation is not required, the sale of LPG shall be temperature compensated through manual means (or alternatively sold by weight). Temperature compensation manually requires the use temperature readings and a chart to manually perform conversions to determine the volume sold.

When discussing potential implementation of these requirements, propane industry officials in Arizona noted that other states do not require sale of LPG through these smaller meters to be temperature compensated or sold by weight and cited numerous problems with manual calibration or changing the MOS to sell by weight. An informal survey of western states appears to support that most do not enforce this requirement to sell LPG through these smaller meters by weight or temperature compensated.

Due to the inconsistency with the method of sale between various states and interpretation of this section, it is being proposed to exempt the sale of LPG through these smaller meters from temperature compensation. The item is proposed developing to allow for discussion and submittal of supporting cost analysis and impact to consumers and businesses that supports a requirement to sell LPG through these small meters as temperature compensated (or by weight).

The submitter noted that the sale of propane that is not temperature compensated can vary in quantities dispensed, which may provide a business or consumer with more or less product than stated.

At the NCWM 2020 Interim Meeting, Mr. Tim Chesser (Arkansas) felt that the current proposal conflicts with language in NIST Handbook 44. Ms. Tina Butcher (NIST OWM) responded the current language in NIST Handbook 44 does not conflict with the language in this item, referencing language from NIST Handbook 44 stating “If a device is equipped with an automatic temperature compensator.” This suggests that language in NIST Handbook 44 does not require modification to accommodate devices with automatic temperature compensation capabilities. Mr. Constantine Cotsoradis (Flint Hill Resources) questioned if this proposal would have any benefit for consumers. Representing the submitter, Mr. Vince Wolpert (Arizona) stated that temperature in the state ranges from 32 to 100 degrees Fahrenheit and volume delivered for LP sales varies accordingly. As a result of the lack of consistency with volume delivered, the state receives a lot of complaints concerning LP sales. Several regulators commented that the most equitable way to address the issue is to require automatic temperature compensation for all sales. The original submitter received feedback from the fall regions and modified the language (dated January 24, 2020). The submitter, Ms. Wilson recommended this modified language be vetted through the regional meetings and industry for consideration. The Committee concurred with the recommendation and moved this item forward as the Item Under Consideration as Informational.

On the 2020 NCWM Interim Agenda, the item under consideration appeared as:

2.21. Liquefied Petroleum Gas. – All liquefied petroleum gas, including, but not limited to propane, butane, and mixtures thereof, shall be kept, offered, exposed for sale, or sold by the pound, metered cubic foot [^{NOTE 7, page 132}] of vapor (defined as 1 ft³ at 60 °F [15.6 °C]), or the gallon (defined as 231 in³ at 60 °F [15.6 °C]). All metered sales by the gallon, except those using meters with a maximum rated capacity of 20 gal/min or less, shall be accomplished by use of a meter and device that automatically compensates for temperature. **Metered sales using a meter with a maximum rated capacity of 20 gal/min or less is exempt from temperature compensation requirements.**

(Added 1986 **Amended 20XX**)

At the 2021 NCWM Interim Meeting the language within NCWM Publication 15 appeared as:

2.21. Liquefied Petroleum Gas. – All liquefied petroleum gas, including, but not limited to propane, butane, and mixtures thereof, shall be kept, offered, exposed for sale, or sold by the pound, metered cubic foot [^{NOTE 7, page 132}] of vapor (defined as 1 ft³ at 60 °F [15.6 °C]), or the gallon (defined as 231 in³ at 60 °F [15.6 °C]). ~~All metered sales by the gallon, except those using meters with a maximum rated capacity of 20 gal/min or less, shall be accomplished by use of a meter and device that automatically compensates for temperature.~~

(a) All metered sales by the gallon using a meter with a maximum rated capacity greater than 20 gal/min, shall be accomplished by the use of a meter and device that automatically compensates for temperature.

(b) For equipment placed in service on or after January 1, 2023, all metered sales using a meter with a maximum rated capacity of 20 gal/min or less shall be accomplished by use of a meter and device that automatically compensates for temperature.

(c) Effective January 1, 2030, all metered sales shall be accomplished by use of a meter and device that automatically compensates for temperature.

(Added 1986 **Amended 20XX**)

At the NCWM 2021 Interim Meeting, Mr. Chesser commented his concerns between the NIST HB130 Method of Sale and NIST Handbook 44 requirements. Mrs. Butcher addressed questions that were stated within the reporting for this Item. She also provided an in-depth background and discussion on this item. It was noted that NIST OWM submitted modified language that was posted under the NCWM L&R supporting documents.

Some of the bullet points that were in the NIST analysis of this item were:

- The existing language references a value of “15.6 °C” for temperature determinations in metric units, according to the current industry practice for sales of petroleum products, the reference temperature for sales in metric are based on 15 °C rather than the exact conversion from 60 °F (which is 15.6 °C). Thus, the temperature reference in metric should be 15 °C.
- The current method of sale for LPG requires sales based on a specified reference temperature because of the significant effects of temperature on the volume of LPG. This helps ensure equity for buyer and seller; facilitate value comparisons among competing applications; and deter those who would take advantage of the effects of temperature on volume from using these effects to their advantage during sales under given temperature conditions.
- There is some concern that including effective dates as shown in the Item Under Consideration does have the effect of rescinding the original requirement for certain categories of sales. Additionally, specifying such dates may possibly lead to future extensions of these date or permanent exceptions. However, if this proposal will allow the community to progress toward more uniform implementation of temperature compensation in the commercial measurement of LPG, this approach may prove to be a valuable tool for accomplishing this goal and improve understanding and consistent application of the requirements, and we believe the submitter is to be commended for striving to achieve this clarity and uniformity in application.
- The second clause of the current Item Under Consideration addresses equipment put into service as of January 1, 2023. The generic reference to “equipment placed into service” implies that only newly installed equipment with flow rates of 20 gpm or less needs to include automatic temperature compensation capabilities. This could be misconstrued as negating the first clause in the proposal. We believe the intent of the submitter was to simply expand the requirement for “automatic” temperature compensation capability for metering systems above 20 gpm to include those systems below this flow rate point. Thus, a recommended alternative is included in the suggested changes.
- Formatting Changes:
 - By formatting the language into sub-sections, it makes the method of sale requirement easier to follow and apply and facilitates consideration of the Item Under Consideration.
 - For the next released edition of NIST Handbook 130, NIST OWM will be reformatting the references to “Notes” and their associated page numbers and replacing these with notes formatted as “Section ##. Note.”

Mr. Scott Simmons (Colorado) led a discussion regarding some of the issues that his state faced regarding LPG sales. Mr. Simmons and many other regulators expressed support for this Item. Many were unaware of the NIST modified proposal. L&R Chair McGuire encouraged membership to review the NIST proposal. During the Committee work session both the original and NIST proposals were discussed. A Committee member expressed concern that industry

may be unaware of this agenda item. Several Committee members commented that they would reach out to their industry contacts to alert them. The Committee heard many comments that they supported the NIST proposal. The Committee was appreciative that NIST had reformatted the structure to make the language easier to read. The Committee recommends this move forward as a Voting item.

At the 2021 NCWM Annual Meeting, Mr. Swiecicki (NPGA) expressed concern with the language for temperature compensation and how the mechanical devices have a lag in correcting the temperature. Mr. Swiecicki did request that in Section 2.21.2.(b) that the date to be moved to 2025, or at least another year added. Mr. Schnepf (California) remarked that in Section 2.21.2.(a) the language should read “equal to or greater than” to align with NIST HB44 language. Mr. Allen (Arizona) was supportive of the changes from Mr. Schnepf. Mr. Willis (New York) rose to oppose this item and believes this item is detrimental to the propane industry. He remarked that they are done by weight and the temperature compensation is an issue with the smaller tanks. Mr. Ramsburg (Maryland) asked the Committee to withdraw the item.

Based on testimony during open hearings and reviewing the documents from the Regional Association Meetings, the Committee changed the effective date in Section 2.21.2.(b) from January 1, 2023 until January 1, 2024. In Sections 2.21.2. (a), (b) and (c) replaced the words “meter and device” with “metering system.” The Committee concurred with Mr. Schnepf’s recommendation to modify the language in Section 2.21.2.(a) to replace the words “greater than or equal to” with “equal to or greater than.” This item did appear as a Voting Item at the 2021 NCWM Annual Meeting but did not garner enough votes therefore it was returned to the Committee.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the WWMA 2019 Annual Meeting, the Committee heard comments in support of addressing the underlying issue that resulted in this proposal. Mr. Simmons recommended an alternative proposal for consideration to require automatic temperature compensation (ATC) for all LPG meters.

1. A non-retroactive date for all new equipment to have ATC.
2. A retroactive date for all equipment to have an ATC retrofit or replacement.

Mr. Clark Cooney (California) commented that LPG has a very high thermal coefficient of expansion, therefore all LPG meters should be temperature compensated. The Committee believes the item is fully developed and recommended it as a Vote.

Several comments were received that designation of this item as Voting provides an incorrect impression that the WWMA supported the item as written, without consideration of additional options for the sale of propane using meters that temperature compensate. The submitter stated that while the item itself does not require further development; an alternate option will be developed to account for the comments received at the WWMA conference to be presented to other regional meetings. The WWMA L&R Committee agreed to change the status of the item from Voting to Developing.

At the SWMA 2019 Annual Meeting, they considered the two proposals that were submitted by Ms. Wilson on September 30, 2019. The Committee took into consideration proposal number two.

2.21. Liquefied Petroleum Gas. – All liquefied petroleum gas, including, but not limited to propane, butane, and mixtures thereof, shall be kept, offered, exposed for sale, or sold by the pound, metered cubic foot ^[NOTE 7, page 131] of vapor (defined as 1 ft³ at 60 °F [15.6 °C]), or the gallon (defined as 231 in³ at 60 °F [15.6 °C]). ~~All metered sales by the gallon, except those using meters with a maximum rated capacity of 20 gal/min or less, shall be accomplished by use of a meter and device that automatically compensates for temperature.~~

- (a) All metered sales by the gallon using a meter with a maximum rated capacity greater than 20 gal/min, shall be accomplished by use of a meter and device that automatically compensates for temperature.**
- (b) For equipment placed in service on or after January 1, 2023, all metered sales using a meter with a maximum rated capacity of 20 gal/min or less shall be accomplished by use of a meter and device that automatically compensates for temperature.**
- (c) Effective January 1, 2030, all metered sales shall be accomplished by use of a meter and device that automatically compensates for temperature.**

North Carolina would like to have this item be withdrawn because they have a statute that addresses LPG, and they will continue with flat sales. The Committee did like the proposal that was presented but believed there are too many variables in the method of sale and enforcement of LPG by the states. They would like consideration as to what to do with the sale of portable cylinders. The Committee recommended this as a Developing item to allow time to address the states' concerns.

At the NEWMA 2019 Interim Meeting, the L&R Chair reviewed the information provided from the previous two regional meetings. Mr. Richard Sutter (Richard Suiter Consulting) commented that the proposal, as written, could be problematic as it pertains to all sizes of devices. The Committee recommends the item stay with the developer for further work and vetting through the regions.

During the 2021 NEWMA Annual Meeting, Mr. Swiecicki commented in support of this item but would like to extend the timeline in Section 2.21.2(b) from 2023 to 2025 to allow industry the opportunity to comply. Mr. Walt Remmert (Pennsylvania) asked for clarity as to why the extension was needed. The proposed language states that all devices being put into service is during or after 2023, and questions whether the extension of the date is necessary. After review of the justification to consider extending the timeline for two years, the Committee recommended that this item move forward as stated.

At the 2020 Fall Meetings of the WWMA Annual Meeting, NEWMA Interim Meeting, and SWMA Annual Meeting, they adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the CWMA 2020 Interim Meeting, Mr. Charlie Stutesman (Kansas) commented that if this requires a temperature compensation meter, Handbook 44 exempts meters with a capacity of 20 gallons per minute or less and wonders if that would create an inconsistency between NIST Handbooks 44 and 130. Ms. Warfield commented that the submitter asked that this item move forward through the regions for consideration. Ms. Warfield further stated NIST believed the language in the two handbooks did not conflict. Mr. Loren Minnich (Kansas) commented that NIST Handbook 44, Section S.2.8. does not conflict. Mr. Stutesman asked for clarification regarding whether this would force meters without temperature compensation to require them to be installed. Ms. Warfield further commented that the reason this item was developed is to provide consistency for the method of sale. Mr. Ivan Hankins (Iowa) also commented if there is a conflict between the handbooks. Mr. Stutesman lastly commented that he believes that NIST Handbook 130 indicates that states shall require temperature compensation, and Handbook 44 indicates that states may, but are not required to have temperature compensation meters, and whether this should be a jurisdictional issue dependent as to which handbooks are adopted by the states. Ms. Warfield reminded members to review the background information on this issue. Mr. Stephen Peter (Wisconsin) asked how if this item is adopted, there should be lead time of possibly 2030 to allow time for compliance. The Committee discussed the implementation date should be five years from the date of adoption. The L&R Committee requested that the NCWM S&T Committee review the implications of passing this item as it relates to requiring temperature compensation on all meters. The Committee believed that the item is fully vetted in terms of its technical content and therefore recommended it become a Voting item.

During the Committee's work session, Ms. Warfield indicated that metric terms are not included in the language and suggested that the units be included as highlighted below.

2.21. Liquefied Petroleum Gas. – All liquefied petroleum gas, including, but not limited to propane, butane,

and mixtures thereof, shall be kept, offered, exposed for sale, or sold by the (kilogram) pound, (cubic meter) metered cubic foot ^[NOTE 7, page 132] of vapor (defined as 1 ft³ at 60 °F [15.6 °C]), or the (liter) gallon (defined as 231 in³ at 60 °F [15.6 °C]). ~~All metered sales by the gallon, except those using meters with a maximum rated capacity of 20 gal/min or less, shall be accomplished by use of a meter and device that automatically compensates for temperature.~~

At the CWMA 2021 Annual Meeting, Ms. Warfield commented that we would likely hear additional comments from the LPG industry, and they may make a language change prior to the NCWM Annual Meeting. She further commented that industry representatives will attend NEWMA Annual Meeting scheduled for May 18, 2021. Mr. Doug Musick (Kansas) asked what the concerns were from the industry. Ms. Warfield said she had not received industry's final comments but anticipate they will present them in time for the NEWMA Annual Meeting.

Mrs. Butcher commented the requirement for selling LPG based on a 60 °F gallon is already stated in this regulation and applies to all sales; however, misunderstand the application of the requirement that requires some metering systems to automatically compensate for temperature differences and erroneously believed this exempts sales in remaining applications from compensation. Mr. Minnich commented that he was unclear about the language regarding this issue. He indicated he preferred the phrase "metering system" rather than "meter and device." Ms. Butcher explained the relationship between temperature and metering. Ms. Butcher commented that she understands there may have been questions regarding the threshold of 20 gallons per minute and clarified that rates higher than this are installed on vehicle mounted systems and are likely equipped with temperature compensating systems. Mr. Hankins supported this item and believed it should move forward. The Committee supported voting status of this item with the editorial change suggested by Mr. Minnich replacing the phrase "meter and device" with "metering system." The change is editorial because it does not change the intent of the model language.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports to review these documents.

FLR - UNIFORM FUELS AND AUTOMOTIVE LUBRICANTS REGULATION

FLR-20.5 I Section 2.1.2.(a). Gasoline-Ethanol Blends

(This item was deescalated by the Committee to Informational status.)

(This item appeared as part of Block 4 as FLR-20.2 within NCWM Publication15 (2020) Interim Agenda. Part of the original "Item Under Consideration" was not moved forward as a Voting item and now appears in Block 4 of this Agenda.)

Source:

American Petroleum Institute (API)

Purpose:

More comprehensively align NIST Handbook 130 Uniform Fuels and Automotive Lubricants Regulations with the U.S. EPA's rule that grants a 1 psi vapor pressure waiver to E15 for summertime (June 1 to September 15) and to help ensure consumers receive a consistent E15 blend. The proposed changes to HB 130 reflect the important information that an inspector will need to ensure that E15 is properly blended and that the potential harm to the consumer and the environment will be minimized.

Item Under Consideration:

Amend NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation as follows:

2.1. Gasoline and Gasoline-Oxygenate Blends

2.1.1. Gasoline and Gasoline-Oxygenate Blends (as defined in this regulation). – Shall meet the latest version of ASTM D4814, “Standard Specification for Automotive Spark-Ignition Engine Fuel” except for the permissible offsets for ethanol blends as provided in Section 2.1.2. Gasoline-Ethanol Blends.

- (a) The maximum concentration of oxygenates contained in gasoline-oxygenate blends shall not exceed those permitted by the EPA under Section 211 of the Clean Air Act and applicable waivers.

(Added 2009) (Amended 2018)

2.1.2. Gasoline-Ethanol Blends. – When gasoline is blended with denatured fuel ethanol, the denatured fuel ethanol shall meet the latest version of ASTM D4806, “Standard Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel,” and the blend shall meet the latest version of ASTM D4814, “Standard Specification for Automotive Spark-Ignition Engine Fuel,” with the following permissible exceptions:

- (a) The maximum vapor pressure shall not exceed the latest edition of ASTM D4814, “Standard Specification for Automotive Spark-Ignition Engine Fuel,” limits by more than 1.0 psi for blends containing at least 9 and not more than 15 volume percent ethanol from June 1 through September 15 as allowed by EPA per 40 CFR 80.27(d).

(Amended 2016, ~~and~~ 2018, 2019 and 20XX)

Note: The values shown above appear only in U.S. customary units to ensure that the values are identical to those in ASTM standards and the Environmental Protection Agency regulation.

(Added 2009) (Amended 2012 and 2016)

Background/Discussion:

Aligning NIST Handbook 130 with the important parts of the U.S. EPA rule that grants a 1-psi vapor pressure waiver during the summer months for E15 is important to ensure that E15 has the correct vapor pressure during these months and provides comprehensive information to aid in ensuring compliant E15 gasoline is provided to consumers. FLR Sections 2.1.2. and 1.23. are modified to address these issues.

Amendments to FLR paragraph 2.1.2.(a), specify that the range of ethanol in the gasoline-ethanol blends qualifying for the 1-psi waiver shall only be from 9 to 15 volume percent as per 40 CFR 80.27(d). The change is unambiguous and does not require the inspector to access the federal rule to understand the applicable range of the waiver.

EPA Final rule, “Modifications to Fuel Regulations to Provide Flexibility for E15; Modifications to RFS RIN Market Regulations” June 10, 2019, www.govinfo.gov/content/pkg/FR-2019-06-10/pdf/2019-11653.pdf

U.S. EPA “Modifications to Fuel Regulations to Provide Flexibility for E15; Modifications to RFS RIN Market Regulations: Response to Comments.” June 10, 2019. Added in total with an example provided below.

www.regulations.gov/document?D=EPA-HQ-OAR-2018-0775-1174

p. 53 (Response to comments) E15 is allowed to be blended at blender pumps as long as **only certified components** are used (sic) Cases where blender pumps introduce uncertified components into gasoline continue to be illegal and may result in fuel that exceeds gasoline quality standards. Parties that blend uncertified components into previously certified gasoline are considered fuel manufacturers under the regulations at 40 CFR part 79 and refiners under 40 CFR part 80. [emphasis added]

The following quotes from the U.S. EPA proposal provide additional information:

- EPA provided the following comments in its final rule on the recent E15 1-psi waiver related to Section G, 2.1.2. and 1.23.:
 - “[U.S. EPA] note that for E15 produced at blender pumps using E85 made with natural gas liquids, **use of the deemed to comply provision to demonstrate compliance would not be available.** This is

because the RVP of natural gas liquids can be as high as 15.0 psi and even a small amount of natural gas liquids could cause the gasoline portion of the blend to not comply with the applicable RVP limitations established under CAA sec. 211(h), which is required under CAA sec. 211(h)(4)(A) to be deemed in compliance. Parties that make E15 at a blender pump using **E85 made with previously certified gasoline can take advantage of the ‘deemed to comply’ provision** and associated affirmative defense at 40 CFR 80.28 if all applicable requirements in 80.28 are met.” (84 FR 27008)

(emphasis added)

- “As discussed in the [U.S. EPA] proposal, E15 made at blender pumps is often made with certified E10 (or CBOB) and E85 (made with denatured fuel ethanol and uncertified hydrocarbon blendstocks, i.e., natural gas liquids). While data is limited, we believe that approximately 50 percent of stations offering E15 make E15 in this manner. (84 FR 27010)
- **40 CFR 80.27(d) *Special provisions for alcohol blends.***
 - (1) Any gasoline which meets the requirements of paragraph (d)(2) of this section shall not be in violation of this section if its Reid vapor pressure does not exceed the applicable standard in paragraph (a) of this section by more than one pound per square inch (1.0 psi).
 - (2) In order to qualify for the special regulatory treatment specified in paragraph (d)(1) of this section, gasoline must contain denatured, anhydrous ethanol. **The concentration of the ethanol, excluding the required denaturing agent, must be at least 9% and no more than 15% (by volume) of the gasoline.** The ethanol content of the gasoline shall be determined by the use of one of the testing methodologies specified in § 80.47. The maximum ethanol content shall not exceed any applicable waiver conditions under section 211(f) of the Clean Air Act.
 - (3) **Each invoice, loading ticket, bill of lading, delivery ticket and other document which accompanies a shipment of gasoline containing ethanol shall contain a legible and conspicuous statement that the gasoline being shipped contains ethanol and the percentage concentration of ethanol.**

(emphasis added)

- **40 CFR 80.28(g) *Defenses.***
 - (8) In addition to the defenses provided in paragraphs (g)(1) through (6) of this section, in any case in which an ethanol blender, distributor, reseller, carrier, retailer, or wholesale purchaser-consumer would be in violation under paragraph (b), (c), (d), (e), or (f) of this section, as a result of gasoline which contains between 9 and 15 percent ethanol (by volume) but exceeds the applicable standard by more than one pound per square inch (1.0 psi), the ethanol blender, distributor, reseller, carrier, retailer or wholesale purchaser-consumer **shall not be deemed in violation if such person can demonstrate, by showing receipt of a certification from the facility from which the gasoline was received or other evidence acceptable to the Administrator, that:**
 - (i) **The gasoline portion of the blend complies with the Reid vapor pressure limitations of § 80.27(a); and**
 - (ii) **The ethanol portion of the blend does not exceed 15 percent (by volume); and**
 - (iii) **No additional alcohol or other additive has been added to increase the Reid vapor pressure of the ethanol portion of the blend.**

In the case of a violation alleged against an ethanol blender, distributor, reseller, or carrier, if the demonstration required by paragraphs (g)(8)(i), (ii), and (iii) of this section is made by a certification, it must be supported by evidence that the criteria in paragraphs (g)(8)(i), (ii), and (iii) of this section have

been met, such as an oversight program conducted by or on behalf of the ethanol blender, distributor, reseller or carrier alleged to be in violation, which includes periodic sampling and testing of the gasoline or monitoring the volatility and ethanol content of the gasoline. Such certification shall be deemed sufficient evidence of compliance provided it is not contradicted by specific evidence, such as testing results, and provided that the party has no other reasonable basis to believe that the facts stated in the certification are inaccurate. **In the case of a violation alleged against a retail outlet or wholesale purchaser-consumer facility, such certification shall be deemed an adequate defense for the retailer or wholesale purchaser-consumer, provided that the retailer or wholesale purchaser-consumer is able to show certificates for all of the gasoline contained in the storage tank found in violation, and, provided that the retailer or wholesale purchaser-consumer has no reasonable basis to believe that the facts stated in the certifications are inaccurate.**

(emphasis added)

On January 17, 2020, Mr. Prentiss Searles (API) submitted modified language for Section 2.1.2.(a). Gasoline-Ethanol Blends. There were over ten letters received in opposition for Item MOS-20.2. Documentation for Dispenser Labeling Purposes and FLR 20.3. Section 1.23. Ethanol Flex Fuel language. Many were opposed due to its duplication with the EPA compliance program for this subject.

At the 2020 NCWM Interim Meeting, Mr. Searles provided a presentation and requested from the floor that Section 2.1.2.(a) Gasoline-Ethanol Blends be considered as a Voting Item and he volunteered to chair a workgroup to further develop the remaining items. Many rose in support and in opposition of this Block. It was addressed by Ms. Warfield (NIST) that FALS was tasked by the Committee in July 2019 to review the EPA language and its impact on the regulations within the Fuels Regulations within NIST Handbook 130. FALS Chair Striejewske remarked that he had created a focus group but needs additional clarification from the Committee as to what specifically they should address.

During Committee work session, they concurred that Section 2.1.2.(a). Gasoline-Ethanol Blends will proceed as a Voting item. All the remaining items will be merged into Block 4 and be assigned to FALS for further development.

At the 2020 NCWM Annual Meeting, several comments were heard both in opposition and for support of the item from industry and regulators. Those opposed included Mr. Mike Harrington (Iowa), Mr. Charlie Stutesman (Kansas), Mr. Jim Willis (New York), Mr. Doug Rathbun (Illinois), Mr. Chuck Corr (Corr Consulting), Mrs. Kristy Moore (Growth Energy), and Mr. Kevin Adlaf (ADM). Those opposed voiced concern over the newly implemented EPA streamlining rules. Questions were raised if the changes would affect this item or if the item is now necessary? Other concerns were heard that the language would be moving backwards, that having the percentages within the regulation could create issues if the EPA changed them in the future. The current handbook language is effective, and this type of work is done in a lab not the field where the requirements could easily be looked up. Those supporting the item included Mr. Searles, Mr. Joe Sorena (Chevron), and Mr. Russ Lewis (Marathon). The supporting comments included that this just adds back language which was not included during the emergency amendment to the NIST Handbook 130 (2020 edition). Mr. Steven Harrington (Oregon) supported this as a voting item or recommended leaving it on the agenda for another cycle. It was decided that further review was needed, and the item was downgraded to Informational status.

At the 2021 NCWM Interim Meeting, the Committee was informed that after a multiyear process the EPA Streamlining Rule was signed in late 2020. The rule has drawn considerable interest and discussion with various stakeholders. Many would like to wait for the streamlining rules and a review of the NIST Handbook 130 regulations. Some believe that language is specified in the CFR and the streamlining rule does not affect this. Some felt this item should be withdrawn in its entirety. A few comments were heard that were similar to those heard at the NCWM Annual meeting open hearings in both support and opposition to of the item. A neutral comment was heard from Mr. Elliott (Washington) challenging for theoretical examples showing the harm of having or not having the proposed language added back in. The Committee deemed this item to be fully developed and felt this should be voted on its own merit.

At the 2021 NCWM Annual Meeting, FALS Chair Striejewske provided an overview report to the Committee stating, this item was discussed at some length during FALS Sunday work session. Item FLR-20.5 added language to Section 2.1.2(a) relevant to the summertime 1 psi vapor pressure waiver for E15. However, on July 2, 2021, the Washington,

District of Columbia Court of Appeals offered an opinion which struck down the waiver, saying in brief that the U.S. EPA had overstepped their authority in granting the waiver in 2019. There were varying views within FALS members as to how this Item should proceed at the Conference. Mr. Corr spoke on behalf of assigning a developing status, as work is required to addressing RBOB limitations. The FALS did recommend to the Committee to de-escalating this item from its Voting status but did not have a consensus recommendation for a new status.

Mr. Searles requested that this item be deescalated until the court matter is sorted out. He informed membership that on July 2, 2021, the U.S. Court of Appeals for the D.C. Circuit issued an opinion that ruled on EPA's rule in 2019 that extended the E10 Reid Vapor Pressure (RVP) waiver to 15 percent volume ethanol blends (E15) during the summer driving season (June 1-September 15). The court determined that the Clean Air Act does not authorize the RVP waiver to be extended to E15 and vacated the portion of the rule asserting that E15 is substantially similar to E10. In short, the court overturned EPA's rule on the E15 waiver. Consequently, by the time the court procedures take place they will not have a mandate to vacate until after the summer driving season is over. Mr. Searles recommend this get assigned back to FALS to keep them engaged. Ms. Moore and Mr. Harrington (Iowa and on behalf of the CWMA) recommended this item be withdrawn. An industry member and NEWMA recommended this be deescalated to an Assigned status.

The Committee deescalated this item from Voting to Informational status and will be responsible for this Item. The Committee will review any court actions on this item and determine a status at the 2022 NCWM Interim Meeting.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the 2019 WWMA Annual Meeting, a presentation was provided by Mr. Joe Sorena (representing API). Mr. Harrington recommended this be assigned to FALS for review and he concurs with the modification to Section 2.1.2.(a) in adding language "containing at least 9 and not more than 15 volume percent ethanol." Mr. Adlaf felt that the proposal provided too much information that was not necessary. Mr. Adlaf asked if there was any data to support this proposal. Ms. Cadence Matijevich (Nevada) remarked that Section 2.1.2.(b), the first sentence has grammar issues. Ms. Jacki Fee (Cargill) remarked that several items were left out of the language. Ms. Moore remarked that the item was addressed at the 2019 NCWM Annual meeting and recommended this item be withdrawn. The Committee recommended this be Assigned to FALS for further review. It was noted that the formatting was not correct within the agenda and it should appear as:

2.1.2. Gasoline-Ethanol Blends. – When gasoline is blended with denatured fuel ethanol, the denatured fuel ethanol shall meet the latest version of ASTM D4806, "Standard Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel," and the blend shall meet the latest version of ASTM D4814, "Standard Specification for Automotive Spark-Ignition Engine Fuel," with the following permissible exceptions:

- (a) The maximum vapor pressure shall not exceed the latest version of ASTM D4814, "Standard Specification for Automotive Spark-Ignition Engine Fuel," limits by more than 1.0 psi for blends **containing at least 9 and not more than 15 volume percent ethanol** from June 1 through September 15 as allowed by EPA per 40 CFR 80.27(d).

(Amended 2016, 2018, ~~and~~ 2019, **and 20XX**)

- (b) An ethanol blender, distributor, reseller, carrier, retailer, or wholesale purchaser-consumer who exceeds the applicable standard by more than 1.0 psi, shall demonstrate, by showing receipt of a certification from the facility from which the gasoline, gasoline-ethanol blend or ethanol flex fuel blend was received, that the hydrocarbon portion of the blend complies with the Reid vapor pressure and other limitations of 40 CFR 80.27(a), as required in 40 CFR 80.28(g)(8). The certification shall be supported by evidence that the above criteria have been met, such as an oversight program which includes periodic sampling and testing of the gasoline or monitoring the volatility and ethanol content of the gasoline.**

(Added 20XX)

NOTE 1: The values shown above appear only in U.S. customary units to ensure that the values are identical to those in ASTM standards and the Environmental Protection Agency regulation.

(Added 2009) (Amended 2012, ~~and~~ 2016, ~~and~~ 20XX)

At the 2019 SWMA Annual Meeting, the Committee believed there could be misuse of Section 2.1.2(b). Once the sample is tested it could be in violation for being substandard and the responsible party would be the retailer. How does this responsibility change when they are showing a certification where the product is coming from and is the product in the tank? It would be difficult for the inspector for following the quality and oversight of that product. During Committee work session, clarification was provided, that if there is documentation that certified product is within the tank the retailer does not need to test for conformance. There must be a documentation and traceability of the certification. However, if there is no certification then testing would need to be done to be verified. The Committee did not concur with the language and the clarification that was provided. They believe that someone needs to be responsible even if certification is provided. There were too many questions concerning this issue and the Committee is requesting this be assigned to FALS for additional work and a recommendation to the NCWM L&R Committee.

At the 2019 NEWMA Interim Meeting, Mr. Bill Hornbach (representing Chevron and API) made a brief presentation as to the details of the proposal. Mr. Hornbach supports the item. Ms. Moore submitted written comments and believed the item should be withdrawn. Ms. Fee opposed the item and indicated that the word “certification” is misleading and recommended the item be withdrawn. The Committee recommended this item be assigned to FALS for further technical review and clarification.

At the 2021 NEWMA Annual Meeting, Mr. Chuck Corr (Iowa Renewable Fuels Association) recommended this section be withdrawn. Mr. Corr stated the three major points for his justification; the EPA citation in the proposal is outdated, the text proposed for addition could be considered incomplete, and while the citation in the current regulation must be updated the current format of only providing the citation was appropriate. If the details are considered necessary in NIST Handbook 130, there is an additional stipulation in the regulations that also should be included. The proposed text is inconsistent with the new regulation. The details involve analytical results which are determined in a fuels lab where there is reliable access to the regulations. The field inspectors do not conduct the analytical work on fuel properties. Mr. Corr believed NCWM needs to be careful about adding excessive and unnecessary details into the NIST handbook. Ms. Moore commented that NEWMA opposed this item and agreed with several of the comments offered by Mr. Corr. The CWMA met in early May and recommend this item be withdrawn. The NEWMA L&R Committee believed the item is related to work being addressed by the FALS EPA Streamlining Rule FG which is harmonizing NIST Handbook 130 with EPA’s new rule. Therefore, the item is not yet finalized in its development, and should be assigned to FALS for coordination with FG, which was not formed until after the 2021 NCWM Interim Meeting.

At the 2019 CWMA Interim Meeting, Ms. Bev Michels (representing BP and API) commented that the purpose of this item is the same as Block 4 Items. Mr. Stutesman stated that this proposal adds new provisions in addition to the Clean Air Act. Ms. Michels commented that she believes this proposal is directed only to the elements that regulators would be enforcing and provide consumer protection. Mr. Doug Musick (Kansas) asked why natural gas liquids (NGL) as an additive was considered a certified component. Mr. Harrington commented that he had gotten a call from an engine manufacturer regarding bad fuel. Mr. Harrington indicated he informed the engine manufacturer that 30 % of the fuel was NGL. The OEM indicated that should not be problematic. Mr. Rod Lawrence (Magellan) commented that he met with EPA and clarified that you cannot use an ethanol flex fuel made with uncertified NGL’s to meet RFS volume obligations. Ms. Tamara Paik (Marathon Petroleum Co.) commented that if you certify the

NGL's, then you know the Reid vapor pressure (RVP). Mr. Stutesman recommended this item be withdrawn and believes this issue could conflict with the Clean Air Act, and if a fuel fails vapor pressure, it is not in specification. Mr. Harrington also recommended this be withdrawn. Mr. Adlaf wonders if weights and measures would become EPA's customer through this proposal and is concerned about language being outdated soon after it is implemented. Mr. Corr commented that he believes the language will lead to additional aspects to be enforced. He also recommended the item be withdrawn. Based on the comments during open hearings, the Committee recommends the item be Withdrawn.

At the 2021 CWMA Annual Meeting, Mr. Stutesman stated he opposed this item since this item should fall in the same criteria that NCWM has adopted, that states only references to other standards rather than enumerating them in NIST Handbook 130. He also felt that referencing the EPA is appropriate and changing the language to exact wording is unnecessary and inconsistent with other standard references throughout NIST Handbook 130. Mr. Searles commented that this item is fully developed and is ready for a vote by NCWM. Ms. Moore commented that she opposes this item. She commented the original language in this section of NIST Handbook 130 was overwhelmingly passed, and believes this change indicates a bias against biofuels. Ms. Crystal Hayes (Iowa) commented that she opposes this item and requested it be deescalated. Ms. Hayes further commented that the CWMA recommended this item be withdrawn in past meetings. Mr. Corr commented that he believes this item should be withdrawn because the regulatory citation reference has changed. Mr. Corr believes this item should be withdrawn and the numeric citation be updated through the FALS EPA Streamlining focus group currently underway. Ms. Warfield commented that this item can be deescalated when the NCWM L&R Committee reviews regional and other comments. Ms. Moore further commented that she disagrees that the specification needs to be enumerated, as commented by Ms. Warfield. Ms. Moore said no regulators measure vapor pressure in the field, so it does not assist the regulator in their enforcement decisions. Mr. Stutesman agreed. Ms. Warfield clarified that she was referencing how NIST handbooks are formatted with a specific reference to the federal regulation. There is currently a FALS FG addressing harmonization with the EPA Streamlining Rule, so the Committee believes this item should be withdrawn.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports to review these documents.

FLR-21.1 W Section 4.4. Product Storage and Dispenser Identification

(This Item was Withdrawn)

Source:

Delaware Weights and Measures

Purpose:

Make product lines distinguishable so Inspectors can identify defective equipment.

Item Under Consideration:

Amend NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation, as follows:

4.4. Product Storage and Dispenser Identification.

4.4.1. Fill Connection Labeling. – The fill connection for any fuel product storage tank or vessel supplying engine-fuel devices shall be permanently, plainly, and visibly marked as to the product contained.

(Amended 2008)

4.4.2. Declaration of Meaning of Color Code. – When the fill connection device is marked by means of a color code, the color code shall be conspicuously displayed at the place of business and the API color codes as specified and published in "API Recommended Practice 1637" shall be used.

(Amended 2018)

4.4.3. Dispenser Identification. – Inside the dispenser cabinet, the individual dispenser supply piping or the individual meters must be marked by either a label or by color (as defined in 4.4.2.) as to the grade of fuel that they provide.

(Added 20XX)

Original Justification:

With the development of new technologies, there is no way for an Inspector to differentiate which meter is supplying fuel to the discharge hose. In the past, a cog, a gear or totalizer would be visible, and you could identify which meter belonged to which grade of fuel. If the meter is leaking today, you have to fail all grades because you cannot verify which grade is at issue. With pulsers and security covers to prevent access, you cannot see which meter is actually moving product. The easiest solution would be to spray paint a spot on the supply line with white for Regular, red for Premium, Yellow for Diesel, etc. This would also be beneficial when verifying which type of filter must be installed (10 micron for Unleaded or 30 micron for Diesel/Kerosene).

The submitter acknowledged that this would be added expense and extra step to installing a dispenser. It would also be costly for the retailer to have a service person come and make needed compliance repairs if they were unable to do it themselves. This could be non-retroactive to alleviate retailers from incurring new expenses but would be more beneficial if it were retroactive.

The submitter requested Voting status for this item in 2021.

Arguments in Favor:

Regulatory:

- The submitter of the proposal Robert Huff (Delaware) informed the Committee that he was having issue with the new covers on the cabinet, and he is unable to differentiate the difference when he does not have access to the pump.

Arguments Against:

Regulatory:

- There were many regulators who spoke that they were not in support of this proposal.

Industry:

- There were three industry members that do not support this proposal.

Advisory:

- Ms. Warfield (NIST OWM) noted that at three of the Fall Regional Association Meetings they requested this item be withdrawn and this information can be found in the background discussion.

Item Development:

At the 2021 NCWM Interim Meeting the Committee reviewed the Regional Association Meetings reports and concurred this is a best practice but not a weights and measures issue. They encourage the submitter to take some of the suggestions offered at the Regional Meetings and develop a new proposal for consideration. The Committee withdrew this item, finding that it does not have enough merit.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the 2020 WWMA Annual Meeting, a regulator from the State of New Mexico found the proposal helpful from a weights and measures and environmental field inspector's point of view.

The Committee heard concerns from industry and regulators regarding the costs to retrofit dispensers, changing colors on secondhand dispensers, challenges with ready access to the API document, the challenge of one dispenser providing a myriad of grades and blending fuels, and questioning if the problem the proposal intends to address is pervasive enough to make a regulation. Testimony was given regarding logistical challenges of implementing a standardized color code, the possible cost of implementation, and whether this was something that should be codified in regulation.

The WWMA L&R Committee recommended this item be Withdrawn. The Committee felt while well intentioned, this item is better suited as a best practice.

At the 2020 SWMA Annual Meeting, the L&R Committee received comments from several regulators in favor of the proposed item and believed it had merit but needed more development. Many commented that feedback was needed from industry and other regulators. Tennessee and North Carolina adopt Section 4.4.2. Declaration of Meaning of Color Code of the Uniform Fuels and Automotive Lubricants Regulation. Mr. Prentiss Searles (API) commented that there would be many challenges in implementation and agreed with the intent of the proposal but felt it would be more fitting as a best practice instead of rule. He also mentioned that the color code standard (API Recommended Practice 1637, Using the API Color-Symbol System to Identify Equipment, Vehicles, and Transfer Points for Petroleum Fuels and Related Products at Dispensing and Storage Facilities and Distribution Terminals”) has been updated and is available online (www.apiwebstore.org/). The latest version can also be reviewed in the API “reading room” at this www.api.org/products-and-services/standards/rights-and-usage-policy#tab-ibr-reading-room. An account will need to be created, which is free, and then go to the “IBR Documents Under Construction” section to read it. Ms. Kristy Moore (Growth Energy) commented that API RP 1637 did not have input by ethanol industry, and they have their own industry standard. Ms. Rebecca Richardson (National Biodiesel Board) while in support of the proposal expressed concerns about the use of only colors to identify for those who may be color challenged. Mr. Searles noted that the updated standard uses a combination of letters and colors.

The Committee recommended this item to be Withdrawn and did not believe this item has merit as a weights and measures issue but may be an industry best practice.

At the 2020 NEWMA Interim Meeting, Mr. Mike Sikula (New York) asked how inspectors will confirm if the required labeling is correct? Mr. Brent Price (Gilbarco) is not in support of this item because he does not feel it is a weights and measures issue. Mr. Ethan Bogren (Westchester County, New York) feels it would be useful for field inspectors to have confirmation as to which meter is for which product. Mr. Bogren believes the item has merit but recommends that the labeling be required on the meter rather than the piping. Mr. Jason Flint (New Jersey) seconds that product labeling on the meter would be helpful. The Committee wants to know what type of labeling would be used. Color coding, octane value, product identification. Mr. Bogren suggested that meter labels use the same terminology as the product identification on the dispenser face. The Committee would like to see the developer revise language to require labeling on meters rather than on the piping. Additionally, the developer should provide standardized terms for meter labeling for different products. The Committee recommended this item as a Developing item for further development by the submitter.

At the 2020 CWMA Interim Meeting, Mr. Charlie Stutesman (Kansas) recommended this item be withdrawn. While regulators inspect the inside of a cabinet, identifying supply lines neither impedes nor helps with inspections therefore he believes this is unnecessary. The term “nonretroactive” does not appear anywhere else in NIST Handbook 130 but instead uses an implementation date. Mr. Prentiss Searles (API) commented that he believes this item would be difficult to implement especially at the manufacturing level and should be withdrawn. Mr. Searles suggested this item might be more appropriate as a best practice. Mr. John Albert (Missouri) concurred the item should be withdrawn. Ms. Moore commented that API RP1637 did not include many ethanol blends for decades, and she did not believe regulations should be implemented that require a purchase of a resource document. Ms. Moore agreed that the item should not move forward at this time without consideration that API RP1637 did not include ethanol blends for a long time. Mr. Doug Rathbun (Illinois) recommended the item be withdrawn. Mr. Searles commented that the API RP1637 is freely available to review online through the API reading room. Based on the discussions heard during open hearings and during the work session, the Committee recommended this item be Withdrawn.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports to review these documents.

ITEM BLOCK 2 (B2) TRACTOR HYDRAULIC FLUID

(This Block of items was adopted pending ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert's Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. These items appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting.

B2: MOS-20.1 VC Section 2.39. Tractor Hydraulic Fluid

B2: FLR-20.1 VC Sections 1.31. Hydraulic Fluid, 2.22. Products for Use in Lubricating Tractors and 3.17. Tractor Hydraulic Fluid

Source:

Independent Lubricant Manufacturers Association (ILMA)

Purpose:

Amend recently adopted NIST Handbook 130 provisions on tractor hydraulic fluids to include specification being developed by ASTM. Improve labeling for required cautionary statement, and distinguish hydraulic fluids not intended for use in tractor central sump.

B2: MOS-20.1. VC Section 2.39. Tractor Hydraulic Fluid

Item Under Consideration:

Amend NIST Handbook 130 Uniform Regulation for the Method of Sale of Commodities as follows.

2.39. Tractor Hydraulic Fluid.

2.39.1. Products for Use in Lubricating Tractors. – Tractor hydraulic fluids shall meet at least one current and/or verifiable original equipment manufacturer's specifications for respective tractors. A specification is deemed verifiable if all necessary bench and laboratory tests are available to verify the fluid's ability to pass those requirements set out by the original equipment manufacturer. A list of current and verifiable **original equipment manufacturer's** specifications is located on the NCWM website (www.ncwm.com). Where a fluid can be licensed against an original equipment manufacturer's specification, evidence of current licensing by the marketer is acceptable documentation of performance against the specification. In the absence of a license from the original equipment manufacturer, adherence to the original equipment manufacturer's specifications shall be assessed after testing per relevant methods available to the lubricants industry and the regulatory agency. Suitability for use claims shall be based upon appropriate field, bench, and/or rig testing. Any manufacturer of a tractor hydraulic fluid making suitable for use claims shall provide, upon request by a duly authorized representative of the Director, credible documentation of such claims. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims shall be provided upon request to a duly authorized representative of the Director. Supporting data shall, upon request, be supplied directly to the Director's office by the additive supplier(s).

(Amended 2021)

2.39.1.1. Conformance. – Conformance of a fluid per Section 2.39.1. Products for Use in Lubricating Tractors does not absolve the obligations of a fluid licensee with respect to the licensing original equipment manufacturer or the original equipment manufacturer's licensing agent(s), where relevant.

2.39.1.2. Tractor Hydraulic Fluid Additives. – Any material offered for sale or sold as an additive to tractor hydraulic fluids shall be compatible with the tractor hydraulic fluid to which it is added and shall meet

all performance claims as stated on the label or published on any website referenced by the label. Any manufacturer of any such product sold shall provide, upon request by a duly authorized representative of the Director, documentation of any claims made on their product label or published on any website referenced by the label.

2.39.2. Labeling and Identification of Tractor Hydraulic Fluid. – Tractor hydraulic fluids shall be labeled or identified as described below.

2.39.2.1. Container Labeling. – The label on a container of tractor hydraulic fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of tractor hydraulic fluid shall be labeled with the following:

- (a) the brand name;
- (b) the name and place of business of the manufacturer, packer, seller, or distributor;
- (c) the words “Tractor Hydraulic Fluid,” which may include words such as “Hydraulic Fluid for Agricultural Applications” or “Universal Tractor Transmission Oil”;
- (d) the primary claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims are those set by original equipment manufacturers;
- (e) any obsolete equipment manufacturer specifications should be clearly identified as “obsolete” and accompanied by the following cautionary statement on the ~~front package label~~ principal display panel in accordance with the Uniform Packaging and Labeling Regulation, Section 8. Prominence and Placement: Consumer Packages and Section 9. Prominence and Placement: Non-Consumer Packages, clearly legible font size and color:

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using this product in applications in which it is not intended.

The above ~~warning~~ cautionary statement is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications; and

- (f) an accurate statement of the quantity of the contents in terms of liquid measure.
(Amended 2021)

2.39.2.2. Identification on Documentation. – Tractor hydraulic fluid sold in bulk shall be identified on the manufacturer, packer, seller, or distributor invoice, bill of lading, shipping paper, or other documentation with the information listed below:

- (a) the brand name;
- (b) the name and place of business of the manufacturer, packer, seller, or distributor;
- (c) the words “Tractor Hydraulic Fluid,” which may include words such as “Hydraulic Fluid for Agricultural Applications” or “Universal Tractor Transmission Oil”;
- (d) the primary claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims are those set by original equipment manufacturers;

- (e) any obsolete equipment manufacturer specifications should be clearly identified as “obsolete” and accompanied by the following **warning cautionary statement** on the ~~front package label~~ **documentation** in **a clear and conspicuous manner, legible font size and color:**

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it is not intended.

The above **warning cautionary statement** is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications: **and**

- (f) an accurate statement of the quantity of the contents in terms of liquid measure.
(Amended 2021)

2.39.2.3. Identification on Service Provider Documentation. – Tractor hydraulic fluid installed from a bulk tank at time of service shall be identified on the customer invoice with the information listed below:

- (a) the brand name;
- (b) the name and place of business of the service provider;
- (c) the words “Tractor Hydraulic Fluid,” which may include words such as “Hydraulic Fluid for Agricultural Applications” or “Universal Tractor Transmission Oil”;
- (d) the primary claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims are those set by original equipment manufacturers;
- (e) any obsolete equipment manufacturer specifications should be clearly identified as “obsolete” and accompanied by the following **warning cautionary statement** on the **customer invoice front package label** in **a clear and conspicuous manner, clearly legible font size and color:**

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it is not intended.

The above **warning cautionary statement** is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications: **and**

- (f) an accurate statement of the quantity of the contents in terms of liquid measure.
(Amended 2021)

2.39.2.4. Bulk Delivery – When the tractor hydraulic fluid is sold in bulk, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery. This document must identify the fluid as defined in Section 2.39.2.2. Identification on Documentation.

2.39.2.5. Storage Tank Labeling. – Each storage tank of tractor hydraulic fluid shall be labeled with the following:

- (a) the brand name; **and**
- (b) the primary performance claim or claims met by the fluid or reference to where these claims may be viewed (for example, website reference). Performance claims are those set by original equipment manufacturers.

2.39.3. Documentation of Claims Made Upon Product Label. – Any manufacturer, packer, or distributor of any product subject to this article and sold shall provide, upon request of duly authorized representatives of the Director, credible documentation of any claim made upon their product label, including claims made on any website referenced by said label. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims shall be provided upon request to a duly authorized representative of the Director. Supporting data shall, upon request, be supplied directly to the Director’s office by the additive supplier(s).

(Added 2019) **(Amended 2021)**

B2: FLR-20.1 VC Sections 1.31. Hydraulic Fluid, 2.22. Products for Use in Lubricating Tractors, and 3.17. Tractor Hydraulic Fluid.

(This item was Adopted)

Item Under Consideration:

Amend NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation.

1.31. Hydraulic Fluid. – A product intended for use in multiple applications with a dedicated hydraulic system and sump. Such fluids cannot be used in tractors. **A person shall not represent a hydraulic fluid in any manner that may deceive or tend to deceive the purchaser as to suitability for the use of the product as a Tractor Hydraulic Fluid.** See Tractor Hydraulic Fluid for reference.

(Added 2019) **(Amended 2021)**

2.22. Products for Use in Lubricating Tractors. – Tractor hydraulic fluids shall meet at least one current and/or verifiable original equipment manufacturer’s specifications for respective tractors. A specification is deemed verifiable if all necessary bench and laboratory tests are available to verify the fluid’s ability to pass those requirements set out by the original equipment manufacturer. A list of current and verifiable **original equipment manufacturer’s** specifications is located on the NCWM website (www.ncwm.com). Where a fluid can be licensed against an original equipment manufacturer’s specification, evidence of current licensing by the marketer is acceptable documentation of performance against the specification. In the absence of a license from the original equipment manufacturer, adherence to the original equipment manufacturer’s specifications shall be assessed after testing per relevant methods available to the lubricants industry and the regulatory agency. Suitability for use claims shall be based upon appropriate field, bench, and/or rig testing. Any manufacturer of a tractor hydraulic fluid making suitable for use claims shall provide, upon request by a duly authorized representative of the Director, credible documentation of such claims. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims shall be provided upon request to a duly authorized representative of the Director. Supporting data shall, upon request, be supplied directly to the Director’s office by the additive supplier(s).

2.22.1. Conformance. – Conformance of a fluid per Section 2.22. Products for Use in Lubricating Tractors does not absolve the obligations of a fluid licensee with respect to the licensing original equipment manufacturer or the original equipment manufacturer’s licensing agent(s), where relevant.

2.22.2. Tractor Hydraulic Fluid Additives. – Any material offered for sale or sold as an additive to tractor hydraulic fluids shall be compatible with the tractor hydraulic fluid to which it is added and shall meet all performance claims as stated on the label or published on any website referenced by the label. Any manufacturer of any such product sold shall provide, upon request by a duly authorized representative of the Director, documentation of any claims made on their product label or published on any website referenced by the label.

(Added 2019) **(Amended 2021)**

3.17. Tractor Hydraulic Fluid

3.17.1. Labeling and Identification of Tractor Hydraulic Fluid. – Tractor hydraulic fluid shall be labeled or identified as described below

3.17.1.1. Container Labeling – The label on a container of tractor hydraulic fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of tractor hydraulic fluid shall be labeled with the following:

- (a) the brand name;
- (b) the name and place of business of the manufacturer, packer, seller, or distributor;
- (c) the words “Tractor Hydraulic Fluid,” which may include words such as “Hydraulic Fluid for Agricultural Applications” or “Universal Tractor Transmission Oil”;
- (d) the primary performance claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims are those set by original equipment manufacturers;
- (e) any obsolete equipment manufacturer specifications should be clearly identified as “obsolete” and accompanied by the following ~~warning cautionary statement~~ on the ~~front package label principal display panel~~ in accordance with the Uniform Packaging and Labeling Regulation, Section 8. Prominence and Placement: Consumer Packages and Section 9. Prominence and Placement: Non-Consumer Packages, clearly legible font size and color:

Caution: Some specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it was not intended.

The above ~~warning cautionary statement~~ is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications: and

- (f) an accurate statement of the quantity of the contents in terms of liquid measure.
(Amended 2021)

3.17.1.2. Identification on Documentation. – Tractor hydraulic fluid sold in bulk shall be identified on the manufacturer, packer, seller or distributor invoice, bill of lading, shipping paper, or other documentation with the information listed below:

- (a) the brand name;
- (b) the name and place of business of the manufacturer, packer, seller, or distributor;
- (c) the words “Tractor Hydraulic Fluid,” which may include words such as “Hydraulic Fluid for Agricultural Applications” or “Universal Tractor Transmission Oil”;
- (d) the primary performance claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims include but are not limited to those set by original equipment manufacturers;
- (e) any obsolete equipment manufacturer standard should be clearly identified as “obsolete” and accompanied by the following ~~warning cautionary statement~~ on the ~~front package label documentation~~ in a clear and conspicuous manner, clearly legible font size and color:

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it is not intended.

The above **warning cautionary statement** is not required if the fluid claims to meet current original equipment manufacturer's specifications and refers to thereby preceding specifications; **and**

- (f) an accurate statement of the quantity of the contents in terms of liquid measure.
(Amended 2021)

3.17.1.3. Identification on Service Provider Documentation. – Tractor hydraulic fluid installed from a bulk tank at time of service shall be identified on the customer invoice with the information listed below:

- (a) the brand name;
- (b) the name and place of business of the service provider;
- (c) the words "Tractor Hydraulic Fluid," which may include words such as "Hydraulic Fluid for Agricultural Applications" or "Universal Tractor Transmission Oil";
- (d) the primary claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims are those set by original equipment manufacturers;
- (e) any obsolete equipment manufacturer specifications should be clearly identified as "obsolete" and accompanied by the following **warning cautionary statement** on the ~~front package label~~ **customer invoice** in **a clear and conspicuous manner, clearly legible font size and color:**

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it is not intended.

The above **warning cautionary statement** is not required if the fluid claims to meet current original equipment manufacturer's specifications and refers to thereby preceding specifications; **and**

- (f) an accurate statement of the quantity of the contents in terms of liquid measure.
(Amended 2021)

3.17.1.4. Bulk Delivery. – When the tractor hydraulic fluid is sold in bulk, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery. This document must identify the fluid as defined in Section 3.17.1.1. Container Labeling.

3.17.1.5. Storage Tank Labeling. – Each storage tank of tractor hydraulic fluid shall be labeled with the following:

- (a) the brand name; **and**
- (b) the primary performance claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims are those set by original equipment manufacturers.

3.17.1.6. Documentation of Claims Made Upon Product Label. – Any manufacturer, packer, or distributor of any product subject to this article and sold shall provide, upon request of duly authorized representatives of the Director, credible documentation of any claim made upon their product label, including claims made on any website referenced by said label. If the product performance claims published by blender

and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims shall be provided upon request to a duly authorized representative of the Director. Supporting data shall, upon request, be supplied directly to the Director's office by the additive supplier(s).

(Added 2019) (**Amended 2021**)

Background/Discussion:

ASTM had announced an effort to develop a national specification for tractor hydraulic fluids. The adopted NIST Handbook 130 language adopted at the 2019 NCWM Annual Meeting, did not provide for such specification. The requirement that a cautionary statement be "clearly legible" is too subjective. The consumer needs to be drawn to the cautionary statement. There are multiple uses of hydraulic fluids not intended for tractor sumps. These alternative uses, especially in ag community need to be addressed.

The submitter acknowledges the ASTM effort is just starting and may not be successful. Invoice printers may not have enough room for cautionary statement.

At the 2020 NCWM Interim Meeting, the Committee received modified language from the submitter (dated, January 21, 2020). Mr. Matthew Leveton (ILMA) requested the language modification for the "cautionary statement" removed forward as a Voting item. Mr. Leveton remarked that farmers are going back to older tractors. Ms. Joy Black (Lubrizol) agreed with Mr. Leveton on this change. Ms. Black requested that there not be a placeholder that includes the words "ASTM specification" within the proposal. Mr. Scott Fenwick (NBB and Chair of ASTM D2) remarked that it would be a while for ASTM Subcommittee C. to develop a standard. Two regulators remarked that the proposal as written was not fully developed. During L&R Committee work session, the Committee struck the words "ASTM specification" throughout the proposal and moved Block 2 forward as a Voting Item.

The Committee also reviewed the language that appeared in NCWM Publication 15 (2020).

2.39. Tractor Hydraulic Fluid.

2.39.1. Products for Use in Lubricating Tractors. – Tractor hydraulic fluids shall meet at least one current and/or verifiable original equipment manufacturer's or a specifications, standard or code of practice issued by a nationally recognized association for respective tractors. A specification is deemed verifiable if all necessary bench and laboratory tests are available to verify the fluid's ability to pass those requirements set out by the original equipment manufacturer. A list of current and verifiable specifications and specification, standard or code of practice is located on the NCWM website (www.ncwm.com). Where a fluid can be licensed against an original equipment manufacturer's specification, evidence of current licensing by the marketer is acceptable documentation of performance against the specification. In the absence of a license from the original equipment manufacturer, adherence to the original equipment specifications shall be assessed after testing per relevant methods available to the lubricants industry and the regulatory agency. Suitability for use claims shall be based upon appropriate field, bench, and/or rig testing. Any manufacturer of a tractor hydraulic fluid making suitable for use claims shall provide, upon request by a duly authorized representative of the Director, credible documentation of such claims. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims shall be provided upon request to by a duly authorized representative of the Director. Supporting data shall, upon request, be supplied directly to the Director's office by the additive supplier(s).

...

2.39.2. Labeling and Identification of Tractor Hydraulic Fluid. – Tractor hydraulic fluids shall be labeled or identified as described below.

2.39.2.1. Container Labeling. – The label on a container of tractor hydraulic fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of tractor hydraulic fluid shall be labeled with the following:

- (e) any obsolete equipment manufacturer specifications should be clearly identified as “obsolete” and accompanied by the following warning on the front package label in clearly legible font size and color **and in a manner reasonably calculated to draw the purchaser’s attention to such warning:**

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using this product in applications in which it is not intended.

The above warning is not required if the fluid claims to meet **and refers to the** current original equipment manufacturer’s specifications **and/or specification, standard or code of practice issued by a nationally recognized association** ~~and refers to thereby preceding specifications.~~

...

2.39.2.2. Identification on Documentation. – Tractor hydraulic fluid sold in bulk shall be identified on the manufacturer, packer, seller, or distributor invoice, bill of lading, shipping paper, or other documentation with the information listed below:

- (e) any obsolete equipment manufacturer specifications should be clearly identified as “obsolete” and accompanied by the following warning on the **invoice, bill of lading, shipping paper, or other documentation front package** in clearly legible font size and color **and in a manner reasonably calculated to draw the purchaser’s attention to such warning:**

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using this product in applications in which it is not intended.

The above warning is not required if the fluid claims to meet **and refers to the** current original equipment manufacturer’s specifications **and/or specification, standard or code of practice issued by a nationally recognized association** ~~and refers to thereby preceding specifications.~~

...

2.XX.2.3. Identification on Service Provider Documentation. – Tractor hydraulic fluid installed from a bulk tank at time of service shall be identified on the customer invoice **or other documentation** with the information listed below:

- (e) any obsolete equipment manufacturer specifications should be clearly identified as “obsolete” and accompanied by the following warning on the **customer invoice or other documentation front package label** in clearly legible font size and color **and in a manner reasonably calculated to draw the purchaser’s attention to such warning:**

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using this product in applications in which it is not intended.

The above warning is not required if the fluid claims to meet **and refers to the** current original equipment manufacturer’s specifications **and/or specification, standard or code of practice issued by a nationally recognized association** ~~and refers to thereby preceding specifications.~~

Changes for B2: FLR-20.1. Section 1.31. Hydraulic Fluid, 2.22. Products for Use in Lubricating Tractors and 3.17. Tractor Hydraulic Fluid.

1.31. Hydraulic Fluid. – A product intended for use in multiple applications with a dedicated hydraulic system and sump. Such fluids cannot be used in tractors. **A person shall not represent a hydraulic fluid in any manner that may deceive or tend to deceive the purchaser as to suitability for the use of the product as a Tractor Hydraulic Fluid.** See Tractor Hydraulic Fluid for reference.

2.22. Products for Use in Lubricating Tractors. – Tractor hydraulic fluids shall meet at least one current and/or verifiable original equipment manufacturer's **or a specification, standard or code of practice issued by a nationally recognized association** for respective tractors. A specification is deemed verifiable if all necessary bench and laboratory tests are available to verify the fluid's ability to pass those requirements set out by the original equipment manufacturer. A list of current and verifiable specifications **and specification, standard or code of practice** is located on the NCWM website (www.ncwm.com). Where a fluid can be licensed against an original equipment manufacturer's specification, evidence of current licensing by the marketer is acceptable documentation of performance against the specification. In the absence of a license from the original equipment manufacturer, adherence to the original equipment manufacturer's recommended requirements shall be assessed after testing per relevant methods available to the lubricants industry and the regulatory agency. Suitability for use claims shall be based upon appropriate field, bench, and/or rig testing. Any manufacturer of a tractor hydraulic fluid making suitable for use claims shall provide, upon request by a duly authorized representative of the Director, credible documentation of such claims. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims shall be provided upon request to a duly authorized representative of the Director. Supporting data shall, upon request, be supplied directly to the Director's office by the additive supplier(s).

...

3.17. Tractor Hydraulic Fluid.

3.17.1. Labeling and Identification of Tractor Hydraulic Fluid. – Tractor hydraulic fluid shall be labeled or identified as described below.

3.7.1.1. Container Labeling. – The label on a container of tractor hydraulic fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of tractor hydraulic fluid shall be labeled with the following:

...

- (e) any obsolete equipment manufacturer specifications should be clearly identified as "obsolete" and accompanied by the following warning on the front package in clearly legible font size and color **and in a manner reasonably calculated to draw the purchaser's attention to such warning:**

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using this product in applications in which it is not intended.

The above warning is not required if the fluid claims to meet **and refers to the current original equipment manufacturer's specifications and/or specification, standard or code of practice issued by a nationally recognized association and refers to thereby preceding specifications.**

...

3.17.1.2. Identification on Documentation. – Tractor hydraulic fluid sold in bulk shall be identified on the manufacturer, packer, seller or distributor invoice, bill of lading, shipping paper, or other documentation with the information listed below:

...

- (e) any obsolete equipment manufacturer specifications should be clearly identified as “obsolete” and accompanied by the following warning on the **invoice, bill of lading, shipping paper, or other documentation front package** in clearly legible font size and color **and in a manner reasonably calculated to draw the purchaser’s attention to such warning**:

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using this product in applications in which it is not intended.

The above warning is not required if the fluid claims to meet **and refers to the** current original equipment manufacturer’s specifications **and/or specification, standard or code of practice issued by a nationally recognized association** ~~and refers to thereby preceding specifications.~~

...

3.17.1.5. Storage Tank Labeling. – Each storage tank of tractor hydraulic fluid shall be labeled with the following:

- (a) the brand name;
- (b) the primary performance claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims include but are not limited to are those set by original equipment manufacturers **or a nationally recognized association**;

At the 2020 Annual Meeting, Mr. Kevin Schnepf (California) did not feel the statement that started with words “the above warning” was needed. Mr. Jeffrey Leiter (ILMA and submitter) supported the NEWMA recommended change from “should” to “shall” and the changed to strike “front-facing label” and replace with “principal display panel.” Mr. Steven Harrington (Oregon) noted that it was not necessary to cite the CFR regulation since it pertained to safety only. The FALS Chair rose to state that FALS members did not review this item in their Sunday work session.

Mr. John McGuire (New Jersey) led the discussion in a thorough review of wordsmithing to ensure sure that the terms documentation, invoice and principal display panel were correct throughout the regulation. In addition, the term “warning” was replaced with “cautionary statement.”

The Committee agreed to the edits that aligned the language within the proposal with current language within NIST Handbook 130, Uniform Packaging and Labeling Regulation.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the 2019 WWMA Annual Meeting, it was discussed that this proposal was not based on the recently adopted language from the 2019 NCWM Annual Meeting. NIST/OWM did provide the submitter with the most recent NIST Handbook 130 language and requested that the submitter provide an updated proposal to the WWMA. The WWMA did not receive an updated proposal from the submitter. Mr. Jeffrey Harmening (API) and several regulators had concerns with the statement “and in a manner reasonably calculated to draw the purchaser’s attention to such warning.” Mr. Mahesh Albuquerque (Colorado) also wanted to know when ASTM would be complete with their work pertaining to this subject. It was difficult for the Committee to evaluate the proposed language with the submitter not using the most recent language. For these reasons the Committee is recommending that the submitter submit modified language to the upcoming regional meetings. The Committee recommended that the language in their agenda be Withdrawn.

At the 2019 SWMA Annual Meeting, it was mentioned that the latest language adopted at the NCWM 2019 Annual Meeting was not used by the submitter in their “item under consideration.” The Committee recommended this item be withdrawn and have the submitter resubmit using the latest language.

At the 2019 NEWMA Interim Meeting, Mr. Leiter commented that ILMA suggested these amendments to the section of the NIST Handbook 130 that was adopted at the 2019 NCWM Annual Meeting, but ultimately opted to submit this cycle to avoid any delay to implement proposed changes that came out of the 2019 NCWM Interim Meeting. Mr. Leiter said there has been work by the submitter on this item throughout the summer. The Committee suggested that the region consider the item as developing and request that the submitter have final language ready for further consideration at the 2020 NCWM Interim Meeting. The Committee also agreed with suggested revisions from both the WWMA and SWMA and believed it should continue to move forward to allow additional time for the submitter to finalize language.

At the 2019 CWMA Interim Meeting, Mr. Ron Hayes (Missouri) read an email from Mr. Leiter with comments on what ILMA is hoping to accomplish with this item. Mr. Hayes does not support the item as it appears on the CWMA agenda. Mr. Hayes believes the term “national recognized association” is ambiguous and would lead to unintended consequences in the marketplace. He believed this item needs further development. Mr. Charlie Stutesman (Kansas) commented that he concurs with Mr. Hayes. Mr. Stutesman also questions what a code of practice is for tractor hydraulic fluid. He also had concerns about the warning label terminology and believes the language is vague and needs more specifics. He believed the item should be withdrawn because the entire proposal is poorly constructed. Mr. Hayes further questioned whether there should be specific font sizes stipulated for various sizes of containers. Mr. Hayes also suggested that an obsolete fluid should not have a label indicating that it is tractor hydraulic fluid, when it is neither a hydraulic fluid nor has it ever been formulated for a tractor. The Committee recommended this item be Withdrawn.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports to review these documents.

ITEM BLOCK 3 (B3) METHOD OF SALE, SECTION 2.33. OIL. FUELS AND AUTOMOTIVE REGS. SECTIONS 2.14. ENGINE (MOTOR) OIL, 3.13. OIL, AND 7.2. REPRODUCIBILITY LIMITS

(This item was Adopted)

These items were designated as a “Voting” item by the Committee at the 2020 NCWM Interim Meeting. Based upon comments received at the 2020 NCWM Annual Meeting, the L&R Committee deemed these items not to be fully developed and changed the status to Informational. At the 2021 NCWM Interim Meeting the Committee modified the Item under Consideration and recommended this as a Voting item at the 2021 NCWM Annual Meeting.

B3: MOS-18.1 V Section 2.33. Oil

B3: FLR-18.1 V Sections 2.14. Engine (Motor) Oil, 3.13. Oil and 7.2. Reproducibility Limits.

B3: MOS-18.1 V Section 2.33. Oil

Item Under Consideration:

Amend NIST Handbook 130, Uniform Method of Sale of Commodities Regulation as follows:

2.33. Oil.

2.33.1. Labeling of Vehicle Engine (Motor) Oil. – Vehicle engine (motor) oil shall be labeled.

2.33.1.1. Viscosity. –The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank, and any invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank, shall contain the viscosity grade classification preceded by the letters “SAE” in accordance with SAE International’s latest version of SAE J300, “Engine Oil Viscosity Classification.”

NOTE: *If an invoice or receipt from service on an engine has limited room for identifying the viscosity, brand, and service category, then abbreviated versions of each may be used on the invoice or receipt and the letters “SAE” may be omitted from the viscosity classification.*

(Note added 2014)

(Amended 2014)

2.33.1.2. Brand. –The label on any vehicle engine (motor) oil container and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the name, brand, trademark, or trade name of the vehicle engine (motor) oil.

(Amended 2014)

2.33.1.3. Engine Service Category. –The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the engine service category, or categories, displayed in letters not less than 3.18 mm ($\frac{1}{8}$ in) in height, as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”),” API Publication 1509, “Engine Oil Licensing and Certification System,” European Automobile Manufacturers Association (ACEA), “European Oil Sequences,” or other Vehicle or Engine Manufacturer standards as approved in Section 2.33.1.3.1. Vehicle or Engine Manufacturer Standard.

(Amended 2014)

2.33.1.3.1. Vehicle or Engine Manufacturer Standard. –The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall identify the specific vehicle or engine manufacturer standard, or standards, met in letters not less than 3.18 mm ($\frac{1}{8}$ in) in height. If the vehicle (motor) oil only meets a vehicle or engine manufacturer standard, the label must clearly identify that the oil is only intended for use where specifically recommended by the vehicle or engine manufacturer.

(Added 2014)

2.33.1.3.2. Inactive or Obsolete Service Categories. ~~–The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with the latest version of SAE J183, Appendix A, Whenever the any vehicle engine (motor) oil in the a container, receptacle, dispenser, storage tank, or in bulk does not meet an active API service category as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”),” API Publication 1509, “Engine Oil Licensing and Certification System,” European Automobile Manufacturers Association (ACEA), “European Oil Sequences,” or other Vehicle or Engine Manufacturer Standards as approved in Section 2.33.1.3.1., Vehicle Or Engine Manufacturer Standard the front or forward facing-label of such vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly visible, cautionary statement set forth in the latest version of SAE J183, Appendix A. Whenever any vehicle engine (motor) oil is declared obsolete by a vehicle or engine manufacturer, the front or forward-facing label of such vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly visible, cautionary statement required by the vehicle or engine manufacturer. If a vehicle engine (motor) oil is identified as only meeting a vehicle or engine manufacturer standard, the labeling requirements in Section 2.33.1.3.1. Vehicle or Engine Manufacturer Standard applies.~~

(Amended 2014 and 2021)

2.33.1.4. Tank Trucks or Rail Cars. –Tank trucks, rail cars, and other types of delivery trucks that are used to deliver bulk vehicle engine (motor) oil are not required to display the SAE viscosity grade and service category or categories on such tank trucks, rail cars, and other types of delivery trucks. **In lieu of such display requirements, the documentation defined in Section 2.33.1.5. Documentation shall be readily available for inspection.**

(Amended 2013, ~~and~~ 2014 and 20XX)

2.33.1.5. Documentation. –When the engine (motor) oil is sold in bulk, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery. This document must identify the quantity of bulk engine (motor) oil delivered as defined in Sections 2.33.1.1. Viscosity, **grade as defined by SAE J300 “Engine Oil Viscosity Classification,”** 2.33.1.2. Brand; 2.33.1.3. Engine Service Category; the name and address of the seller and buyer; and the date and time of the sale. For inactive or obsolete service categories, the documentation shall also bear **a the** plainly visible cautionary statements as required in Section 2.33.1.3.2. Inactive or Obsolete Service Categories. Documentation must be retained at the retail establishment for a period of not less than one year.

(Added 2013) (Amended 2014 and 2021)

(Added 2012) (Amended 2013, ~~and~~ 2014 and 2021)

B3: FLR-18.1 V Sections 2.14. Engine (Motor) Oil, 3.13. Oil and 7.2. Reproducibility Limits.

(This item was Adopted)

Item Under Consideration:

Amend NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation as follows:

Section 2. Standard Specification

2.14. Engine (Motor) Oil. – Shall not be sold or distributed for use unless the product conforms to the following specifications:

- (a) performance claims **made regarding active performance categories, as** listed on the label shall be evaluated against the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification,” API 1509 “Engine Oil Licensing and Certification System,” European Automobile Manufacturers’ Association (ACEA), “European Oil Sequences,” or other “Vehicle or Engine Manufacturer Standards” as applicable; ~~and~~
- (b) **performance claims made regarding any obsolete performance categories, as listed on the label, shall be determined to meet the requirements of Section 3.13.1.3.2. “Inactive or Obsolete Service Categories” by displaying the appropriate cautionary labeling and**
- (c) the product shall meet its labeled viscosity grade specification as specified in the latest version of SAE J300, “Engine Oil Viscosity Classification.”

(Added 2004) (Amended 2014 and 2021)

Section 3. Classification, Identification, and Labeling for Sale

3.13. Oil.

3.13.1. Labeling of Vehicle Engine (Motor) Oil Required.

3.13.1.1. Viscosity. –The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the viscosity grade

classification preceded by the letters “SAE” in accordance with the SAE International’s latest version of SAE J300, “Engine Oil Viscosity Classification.”

(Amended 2012 and 2014)

3.13.1.2. Brand. –The label on any vehicle engine (motor) oil container and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the name, brand, trademark, or trade name of the vehicle engine (motor) oil.

(Added 2012 and 2014)

3.13.1.3. Engine Service Category. –The label on any vehicle engine (motor) oil container, receptacle, dispenser or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the engine service category, or categories, displayed in letters not less than 3.18 mm ($\frac{1}{8}$ in) in height, as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”)” API Publication 1509, “Engine Oil Licensing and Certification System,” European Automobile Manufacturers Association (ACEA), “European Oil Sequences,” or other “Vehicle or Engine Manufacturer Standards” as provided in Section 3.13.1.3.1.

(Amended 2012 and 2014)

3.13.1.3.1. Vehicle or Engine Manufacturer Standard. –The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall identify the specific vehicle or engine manufacturer standard, or standards, met in letters not less than 3.18 mm ($\frac{1}{8}$ in) in height. If the vehicle (motor) oil only meets a vehicle or engine manufacturer standard, the label must clearly identify that the oil is only intended for use where specifically recommended by the vehicle or engine manufacturer.

(Added 2014)

3.13.1.3.2. Inactive or Obsolete Service Categories. ~~–The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”)” Appendix A, Whenever the any vehicle engine (motor) oil in the a container receptacle, dispenser, storage tank or in bulk does not meet an active API service category as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”)” API Publication 1509, “Engine Oil Licensing and Certification System,” European Automobile Manufacturers Association (ACEA), “European Oil Sequences,” or other Vehicle or Engine Manufacturer Standards as approved in Section 2.33.1.3.1., Vehicle Or Engine Manufacturer Standard the front or forward-facing label If a of such vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser or storage tank shall bear the plainly visible cautionary statement set forth in the latest version of SAE J183, Appendix A. Whenever any vehicle engine (motor) oil is declared obsolete by a vehicle or engine manufacturer, the front of forward-facing label of such vehicle engine (motor) oil container, receptacle, dispenser or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly visible cautionary statement required by the vehicle or engine manufacturer.~~

(Added 2012) (Amended 2014 and 2021)

3.13.1.4. Tank Trucks or Rail Cars. Tank trucks, rail cars, and types of delivery trucks that are used to deliver bulk vehicle engine (motor) oil are not required to display the SAE viscosity grade and service

category or categories on such tank trucks, rail cars, and other types of delivery trucks. **In lieu of such display requirements the documentation defined in Section 3.13.1.5. Documentation shall be readily available for inspection.**

(Added 2012) (Amend 2013, ~~and~~ 2014 and 2021)

3.13.1.5. Documentation. – When the engine (motor) oil is sold in bulk, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery. This document must identify the quantity of bulk engine (motor) oil delivered as defined in Sections 3.13.1.1. Viscosity, **grade as defined by the latest version of SAE J300 “Engine Oil Viscosity Classification”**; 3.13.1.2. Brand; 3.13.1.3. Engine Service Category; the name and address of the seller and buyer; and the date and time of the sale. For inactive or obsolete service categories, the documentation shall also bear a plainly visible cautionary statement as required in Section 3.13.1.3.2. Inactive or Obsolete Service Categories. Documentation must be retained at the retail establishment for a period of not less than one year.

(Added 2013) (Amended 2014)

(Amended 2012, 2013, and 2014)

3.13.2. Labeling of Recreational Motor Oil.

3.13.2.1. Viscosity. – The label on each container of recreational motor oil shall contain the viscosity grade classification preceded by the letters “SAE” in accordance with the SAE International’s latest version of SAE J300, “Engine Oil Viscosity Classification.”

3.13.2.2. Intended Use. – The label on each container of recreational motor oil shall contain a statement of its intended use in accordance with the latest version of SAE J300, “Engine Oil Viscosity Classification.”

3.13.3. Labeling of Gear Oil.

3.13.3.1. Viscosity. – The label on each container of gear oil shall contain the viscosity grade classification preceded by the letters “SAE” in accordance with the SAE International’s latest version of SAE J306, “Automotive Gear Lubricant Viscosity Classification” or SAE J300, “Engine Oil Viscosity Classification.”

3.13.3.1.1. Exception. – Some automotive equipment manufacturers may not specify an SAE viscosity grade requirement for some applications. Gear oils intended to be used only in such applications are not required to contain an SAE viscosity grade on their labels.

3.13.3.2. Service Category. – The label on each container of gear oil shall contain the service category, or categories, in letters not less than 3.18 mm ($\frac{1}{8}$ in) in height, as defined by the latest version of SAE J308, “Axle and Manual Transmission Lubricants.”

(Added 2004)

Section 7. Test Methods and Reproducibility Limits

7.2. Reproducibility Limits.

7.2.1. AKI Limits. – When determining the antiknock index acceptance or rejection of a gasoline sample, the AKI reproducibility limits as outlined in the latest version of ASTM D4814, “Standard Specification for Automotive Spark-Ignition Engine Fuel,” Appendix X1 shall be acknowledged for enforcement purposes.

7.2.2. Reproducibility. – The reproducibility limits of the standard test method used for each test performed shall be acknowledged for enforcement purposes, except as indicated in Section 2.2.1. Premium Diesel Fuel and Section 7.2.1. AKI Limits. No allowance shall be made for the precision of the test methods for aviation gasoline or aviation turbine fuels.

(Amended 2008)

7.2.3. SAE Viscosity Grades for Engine Oils. – ~~All values are critical specifications as defined in the latest version of ASTM D3244, “Standard Practice for Utilization of Test Data to Determine Conformance with Specifications.” The product shall be considered to be in conformance if the Assigned Test Value (ATV) is within the specification.~~ With the exception of the low-temperature cranking viscosity, all values required to define SAE Viscosity Grades, as defined in the latest version of SAE J300, “Engine Oil Viscosity Classification”, are critical specifications as defined by the latest version of ASTM D3244, “Standard Practice for Utilization of Test Data to Determine Conformance with Specifications”.

(Added 2008) (Amended 2021)

7.2.4. Dispute Resolution. – In the event of a dispute over a reported test value, the guidelines presented in the latest version of ASTM D3244, “Standard Practice for Utilization of Test Data to Determine Conformance with Specifications,” shall be used to determine the acceptance or rejection of the sample.

7.2.5. Additional Enforcement Action. – The Director may initiate enforcement action in the event that, based upon a statistically significant number of samples, the average test result for products sampled from the same source location is greater than the legal maximum or less than the legal minimum limits (specification value), posted values, certified values, or registered values.

(Added 2008) (Amended 2018)

Background/Discussion:

Consumers are being misled and are not being adequately informed under existing NIST Handbook 130 provisions about the performance of “obsolete” oils in the engines of their vehicles. Many of these obsolete oils can damage modern engines. The submitter recognizes that there may be as many as 14 million vehicles that can use pre-1988 motor oils.

At the 2018 NCWM Interim Meeting, Mr. Bill Striejewski (FALS Chairman) indicated that FALS is recommending this as a Voting item. In addition, support was heard from ILMA, API, and several regulators recommending this item as a Voting item. However, many commenters stated that editorial and minor changes were still needed for the item to be fully developed. Mr. Tim Elliot (Washington) recommended that this item have streamlined language to use a generic warning statement. Suggestions were also provided on the ultimate placement of the label. Due to lack of consensus, potentially non-editorial changes, and lack of specific details on proposed changes, the L&R Committee recommended this item be “Assigned” to FALS for further development to address the issues mentioned in this write-up.

At the 2018 NCWM Annual, Mr. Striejewski remarked that FALS received modified language from the submitter and FALS is recommending this item remain Assigned with the updated.

At the 2019 NCWM Interim Meeting, comments were heard from members of FALS stating that the level of discussion desired was not had due to the absence of the submitter at the FALS meeting held on Sunday, January 13, 2019. There were several comments regarding the term “modern” not being defined in the cautionary statements. Several stakeholders and regulators felt these items needed further review and clarification. A Kansas regulator stated that the caution statement is incorrect and should be modified because it is oil being sold, not an engine. After consideration the Committee recommended this item remain Assigned to FALS.

At the 2019 NCWM Annual Meeting, FALS Chair Striejewski commented that the submitter provided a revision dated May 10, 2019 and is on the NCWM website under the L&R supporting documents. This is the language that the Committee has moved forward for consideration.

Prior to the 2020 NCWM Interim Meeting, the submitter provided an updated proposal dated January 18, 2020. During the open hearings, several members voiced their support for the Block as amended by FALS and for it to move forward as a Voting Item: Mr. Kevin Schnepf (California), Mr. Jeff Harmening (API), Ms. Joanna Johnson (AOCA), Mr. Kurt Floren (Los Angeles County, California). Mr. Matthew Levetown (ILMA, representing submitter) supported the changes made by FALS but with two edits: “Automotive motor oil” not “Automotive lubricants” and the inclusion of a comma after “as applicable to purchaser”.

There was concern from a member that NCWM Publication 15 did not provide the latest language for this Block and that modifications are being sent in at the last minute and members are not able to view them. This has occurred for several items and this situation needs to be addressed. One solution may be for the submitter to provide printed copies for distribution at the meeting. Ms. Lisa Warfield (NIST) stated she understands the frustration, but updated proposals can be found on the NCWM website listed under supporting documents.

The Committee moved this item forward as a Voting item with minor editorial changes.

At the 2020 NCWM Annual Meeting, this Item Block had included Item FLL-18.1. The Committee separated out FLL-18.1 from the block and moved that Item to a Vote. The Committee heard suggested revisions to MOS-18.1 and FLR-18.1. Changes to modify these two items are presented in API Revision (Concept 1- Revisions to MOS 18-1, Section 2.33.1.3.2. Inactive and Obsolete Service Categories and FLR-18.1., Section 3.13.1.3.2. Inactive or Obsolete Service Categories).

Since this Block was deescalated in status, it was returned to the Committee for discussion at the 2021 NCWM Interim Meeting. After hearing comments in support of the API revision, the Committee made the decision to change the Item under Consideration to incorporate the API recommendations. The Committee heard from several State regulators Mr. Charlie Stutesman (Kansas), Mr. Schnepf, Mr. Steven Harrington (Oregon), Mr. Doug Rathbun (Illinois), Mr. Jim Willis (New York), and industry representatives Mr. Jeffrey Leiter, Mr. Harmening. The testimony supported the item, but there was concern by most who testified that the new language had not been properly vetted by all the regions and more time is needed for vetting before voting. The Committee modified the language using the API revision and recommended this as a Voting item.

The API (Concept 1) appears in the Item Under Consideration. The two Sections that were modified had appeared on the Interim Agenda as:

B3: MOS-18.1

2.33.1.3.2. Inactive or Obsolete Service Categories. ~~The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with the latest version of SAE J183, Appendix A, Whenever the any vehicle engine (motor) oil in the a container, receptacle, dispenser, storage tank, or in bulk does not meet an active API service category as defined by the latest version of SAE J183, "Engine Oil Performance and Engine Service Classification (Other than "Energy Conserving")".~~ the front or forward facing-label of such vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly visible, cautionary statement set forth in the latest version of SAE J183, Appendix A. Whenever any vehicle engine (motor) oil is declared obsolete by a vehicle or engine manufacturer, the front or forward-facing label of such vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly-visible, cautionary statement required by the vehicle or engine manufacturer. If a vehicle engine (motor) oil is identified as only meeting a vehicle or engine manufacturer standard, the labeling requirements in Section 2.33.1.3.1. Vehicle or Engine Manufacturer Standard applies.

(Amended 2014 and 20XX)

B3: MOS-18.1 appeared in the 2021 Interim Agenda as:

3.13.1.3.2. Inactive or Obsolete Service Categories. ~~The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with the latest version of SAE J183, "Engine Oil Performance and Engine Service Classification (Other than "Energy Conserving")" Appendix A,~~

Whenever ~~the any~~ vehicle engine (motor) oil in ~~the a~~ container ~~receptacle, dispenser, storage tank~~ or in bulk does not meet an active API service category as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”);” ~~the front or forward-facing label~~ ~~If a of such~~ vehicle engine (motor) oil ~~container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser or storage tank shall bear the plainly visible cautionary statement set forth in the latest version of SAE J183, Appendix A.~~ Whenever any vehicle engine (motor) oil is declared obsolete by a vehicle or engine manufacturer, the front of forward-facing label of such vehicle engine (motor) oil container, receptacle, dispenser or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly visible cautionary statement required by the vehicle or engine manufacturer.

(Added 2012) (Amended 2014 and 20XX)

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the 2019 WWMA Annual Meeting, it was noted that within both regulations Section 2.33.1.3.2. and 3.13.1.3.2. the term “statement” needs to be inserted after the word “cautionary.” With the inclusion of this word the FALS Chair and API believed that B3: MOS-18.1 and B3 FLR-18.1 are fully developed. The Committee is recommending this block be provided a Voting status.

The modified language in each paragraph is shown below in response to a request during the voting session:

2.33.1.3.2. Inactive or Obsolete Service Categories. ~~The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with the latest version of SAE J183, Appendix A.~~ Whenever ~~the any~~ vehicle engine (motor) oil in ~~the a~~ container, ~~receptacle, dispenser, storage tank,~~ or in bulk does not meet an active API service category as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”);” ~~the front or forward facing-label of such vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly visible, cautionary statement set forth in the latest version of SAE J183, Appendix A.~~ Whenever any vehicle engine (motor) oil is declared obsolete by a vehicle or engine manufacturer, the front or forward-facing label of such vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly visible, cautionary ~~statement~~ required by the vehicle or engine manufacturer. ~~If a vehicle engine (motor) oil is identified as only meeting a vehicle or engine manufacturer standard, the labeling requirements in Section 2.33.1.3.1. Vehicle or Engine Manufacturer Standard applies.~~

(Amended 2014 and 20XX)

3.13.1.3.2. Inactive or Obsolete Service Categories. ~~The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”)” Appendix A.~~ Whenever ~~the any~~ vehicle engine (motor) oil in ~~the a~~ container ~~receptacle, dispenser, storage tank~~ or in bulk does not meet an active API service category as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy

Conserving”);” the front or forward-facing label ~~If a~~ of such vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser or storage tank shall bear the plainly visible cautionary statement set forth in the latest version of SAE J183, Appendix A. Whenever any vehicle engine (motor) oil is declared obsolete by a vehicle or engine manufacturer, the front of forward-facing label of such vehicle engine (motor) oil container, receptacle, dispenser or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly visible cautionary statement required by the vehicle or engine manufacturer.

(Added 2012) (Amended 2014 and 20XX)

FLL-18.1. Engine Fuels & Automotive Lubricants Inspection Law, Section 8.6 Prohibited Acts

It was noted within background information in the report that the submitter did not address the concern with Section 8.6. as to why the term “specified” is being stricken. In addition, the sentence is not complete and the Committee questions “what is the meaning of the sentence, it appears to place the burden on the purchaser?” The Committee recognizes this is a preexisting regulation but would like it addressed by FALS.

Based on comments and uncertainty of FLL-18.1 we recommend that the submitter continue to work with FALS to develop this item.

At the 2019 SWMA Annual Meeting, in previous reports Section 2.14. Engine (Motor) Oil had been included. The Committee reached out to Mr. Leiter confirmed that an error this Section is still under consideration and needs to be added into the reporting.

2.14. Engine (Motor) Oil. – Shall not be sold or distributed for use unless the product conforms to the following specifications:

- (a) performance claims made regarding active performance categories, as listed on the label shall be evaluated against the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification,” API 1509 “Engine Oil Licensing and Certification System,” European Automobile Manufacturers’ Association (ACEA), “European Oil Sequences,” or other “Vehicle or Engine Manufacturer Standards” as applicable;
- (b) performance claims made regarding any obsolete performance categories, as listed on the label, shall be determined to meet the requirements of Section 3.13.1.3.2. “Inactive or Obsolete Service Categories” by displaying the appropriate cautionary labeling and**
- (c) the product shall meet its labeled viscosity grade specification as specified in the latest version of SAE J300, “Engine Oil Viscosity Classification.”

(Added 2004) (Amended 2014 and 20XX)

The word “statement” should be added after the term “cautionary” throughout the proposal. The Committee is recommending this remain at FALS and the concerns be addressed.

At the 2019 NEWMA Interim Meeting, Mr. Leiter commented that this proposal followed language that was recently adopted in California that addresses non-compatible or “obsolete” oils in the marketplace. This effort is intended to address current litigation being considered in multiple states. Ultimately, this current language is a product of further work with regulators as well as additional language which was inadvertently left out of the regional agenda proposals. The Committee recommends the item is ready for voting as amended.

At the 2019 CWMA Interim Meeting, L&R Chair Musick (Kansas) commented that there is confusion in the numbering of this item, and the agenda table of contents reference is accurate. Chair Musick also reviewed changes submitted changes from Mr. Leiter’s which mirrored proposed changes from the 2019 NEWMA regional meeting. Mr. Ron Hayes (Missouri) commented that there are too many obsolete oils in the marketplace, and we need to do all

we can to provide consumers with some protection in this area. Mr. Hayes suggested double-checking the language to be sure it is uniform between the sections within NIST Handbook 130. Mr. Stutesman commented that he has been frustrated with how much the language for this item changes each time we meet at the regional and national levels, and it is difficult to take a position when it is constantly changing.

The Committee recommended this item has been fully vetted through each region and is ready for Voting status as amended below. The version listed below was received October 21 by Mr. Musick:

Uniform Method of Sale Regulation

2.14. Engine (Motor) Oil. – Shall not be sold or distributed for use unless the product conforms to the following specifications:

- (a) performance claims **made regarding active performance categories, as** listed on the label shall be evaluated against the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification,” API 1509 “Engine Oil Licensing and Certification System,” European Automobile Manufacturers’ Association (ACEA), “European Oil Sequences,” or other “Vehicle or Engine Manufacturer Standards” as applicable;
- (b) **performance claims made regarding any obsolete performance categories, as listed on the label, shall be determined to meet the requirements of Section 3.13.1.3.2. “Inactive or Obsolete Service Categories” by displaying the appropriate cautionary labeling and**
- (c) the product shall meet its labeled viscosity grade specification as specified in the latest version of SAE J300, “Engine Oil Viscosity Classification.”

(Added 2004) (Amended 2014 **and 20XX**)

Note: the above language was in ILMA’s proposal but was inadvertently omitted by NCWM/NIST because it had not been modified.

2.33. Oil.

2.33.1. Labeling of Vehicle Engine (Motor) Oil. – Vehicle engine (motor) oil shall be labeled.

2.33.1.1. Viscosity. – The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank, and any invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank, shall contain the viscosity grade classification preceded by the letters “SAE” in accordance with SAE International’s latest version of SAE J300, “Engine Oil Viscosity Classification.”

***NOTE:** If an invoice or receipt from service on an engine has limited room for identifying the viscosity, brand, and service category, then abbreviated versions of each may be used on the invoice or receipt and the letters “SAE” may be omitted from the viscosity classification.*

(Note added 2014)

(Amended 2014)

2.33.1.2. Brand. – The label on any vehicle engine (motor) oil container and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the name, brand, trademark, or trade name of the vehicle engine (motor) oil.

(Amended 2014)

2.33.1.3. Engine Service Category. – The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the

engine service category, or categories, displayed in letters not less than 3.18 mm ($\frac{1}{8}$ in) in height, as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”),” API Publication 1509, “Engine Oil Licensing and Certification System,” European Automobile Manufacturers Association (ACEA), “European Oil Sequences,” or other Vehicle or Engine Manufacturer standards as approved in Section 2.33.1.3.1. Vehicle or Engine Manufacturer Standard.

(Amended 2014)

2.33.1.3.1. Vehicle or Engine Manufacturer Standard. – The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall identify the specific vehicle or engine manufacturer standard, or standards, met in letters not less than 3.18 mm ($\frac{1}{8}$ in) in height. If the vehicle (motor) oil only meets a vehicle or engine manufacturer standard, the label must clearly identify that the oil is only intended for use where specifically recommended by the vehicle or engine manufacturer.

(Added 2014)

2.33.1.3.2. Inactive or Obsolete Service Categories. — ~~The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with the latest version of SAE J183, Appendix A, whenever the vehicle engine (motor) oil in the container or in bulk does not meet an active API service category as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”).” If a vehicle engine (motor) oil is identified as only meeting a vehicle or engine manufacturer standard, the labeling requirements in Section 2.33.1.3.1. Vehicle or Engine Manufacturer Standard applies. Whenever any vehicle engine (motor) oil in a container, receptacle, dispenser, storage tank or in bulk does not meet an active API service category as listed in the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”),” the front or forward-facing label of such vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly visible, cautionary statement set forth in Appendix A of the latest version of SAE J183. Whenever any vehicle engine (motor) oil is declared obsolete by a vehicle or engine manufacturer, the front or forward-facing label of such vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly visible, cautionary statement required by the vehicle or engine manufacturer.~~

(Amended 2014 and 20XX)

2.33.1.4. Tank Trucks or Rail Cars. – Tank trucks, rail cars, and other types of delivery trucks that are used to deliver bulk vehicle engine (motor) oil are not required to display the SAE viscosity grade and service category or categories on such tank trucks, rail cars, and other types of delivery trucks. In lieu of such display requirements, the documentation defined in 2.33.1.5 shall be readily available for inspection.

(Amended 2013 ~~and~~ 2014 and 20XX)

2.33.1.5. Documentation. – When the engine (motor) oil is sold in bulk, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery. This document must identify the quantity of bulk engine (motor) oil delivered as defined in Sections 2.33.1.1. Viscosity; grade as defined by SAE J300 “Engine Oil Viscosity Classification,” 2.33.1.2. Brand, 2.33.1.3. Engine Service Category; the name and address of the seller and buyer; and, the date and time of the sale. For inactive or obsolete service categories, the documentation shall also bear the a plainly visible cautionary statements as required in Section 2.33.1.3.2. Inactive or Obsolete Service Categories. Documentation must be retained at the retail establishment for a period of not less than one year.

(Added 2013) (Amended 2014 and 20XX)

(Added 2012) (Amended 2013 ~~and~~ 2014 and 20XX)

Uniform Fuels and Automotive Lubricants Regulation.

Section 3. Classification, Identification, and Labeling for Sale

3.13. Oil.

3.13.1. Labeling of Vehicle Engine (Motor) Oil Required.

3.13.1.1. Viscosity. – The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the viscosity grade classification preceded by the letters “SAE” in accordance with the SAE International’s latest version of SAE J300, “Engine Oil Viscosity Classification.”

(Amended 2012 and 2014)

3.13.1.2. Brand. – The label on any vehicle engine (motor) oil container and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the name, brand, trademark, or trade name of the vehicle engine (motor) oil.

(Added 2012 and 2014)

3.13.1.3. Engine Service Category. – The label on any vehicle engine (motor) oil container, receptacle, dispenser or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the engine service category, or categories, displayed in letters not less than 3.18 mm (1/8 in) in height, as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”)” API Publication 1509, “Engine Oil Licensing and Certification System,” European Automobile Manufacturers Association (ACEA), “European Oil Sequences,” or other “Vehicle or Engine Manufacturer Standards” as provided in Section 3.13.1.3.1.

(Amended 2012 and 2014)

3.13.1.3.1. Vehicle or Engine Manufacturer Standard. – The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall identify the specific vehicle or engine manufacturer standard, or standards, met in letters not less than 3.18 mm (1/8 in) in height. If the vehicle (motor) oil only meets a vehicle or engine manufacturer standard, the label must clearly identify that the oil is only intended for use where specifically recommended by the vehicle or engine manufacturer.

(Added 2014)

3.13.1.3.2. Inactive or Obsolete Service Categories. – ~~The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle,~~

~~dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”)” Appendix A, whenever the vehicle engine (motor) oil in the container or in bulk does not meet an active API service category as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”).” If a vehicle engine (motor) oil is identified as only meeting a vehicle or engine manufacturer standard, the labeling requirements in Section 3.13.1.3.1. Vehicle or Engine Manufacturer Standard applies. Whenever any vehicle engine (motor) oil in a container, receptacle, dispenser, storage tank or in bulk does not meet an active API service category as listed in the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”),” the front or forward-facing label of such vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly visible, cautionary statement set forth in Appendix A of the latest version of SAE J183. Whenever any vehicle engine (motor) oil is declared obsolete by a vehicle or engine manufacturer, the front or forward-facing label of such vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear the plainly visible, cautionary statement required by the vehicle or engine manufacturer.~~

(Added 2012) (Amended 2014 and 20XX)

3.13.1.4. Tank Trucks or Rail Cars. – Tank trucks, rail cars, and types of delivery trucks that are used to deliver bulk vehicle engine (motor) oil are not required to display the SAE viscosity grade and service category or categories on such tank trucks, rail cars, and other types of delivery trucks. In lieu of such display requirements, the documentation defined in 3.13.1.5. shall be readily available for inspection.

(Added 2012) (Amend 2013, ~~and~~ 2014 and 20XX)

3.13.1.5. Documentation. – When the engine (motor) oil is sold in bulk, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery. This document must identify the quantity of bulk engine (motor) oil delivered as defined in Sections 3.13.1.1. Viscosity grade as defined by SAE J300 “Engine Oil Viscosity Classification”; 3.13.1.2. Brand; 3.13.1.3. Engine Service Category; the name and address of the seller and buyer; and the date and time of the sale. For inactive or obsolete service categories, the documentation shall also bear a plainly visible cautionary statement as required in Section 3.13.1.3.2. Inactive or Obsolete Service Categories. Documentation must be retained at the retail establishment for a period of not less than one year.

(Added 2013) (Amended 2014)

(Amended 2012, 2013, 2014 and 20XX)

3.13.2. Labeling of Recreational Motor Oil.

3.13.2.1. Viscosity. The label on each container of recreational motor oil shall contain the viscosity grade classification preceded by the letters “SAE” in accordance with the SAE International’s latest version of SAE J300, “Engine Oil Viscosity Classification.”

3.13.2.2. Intended Use. – The label on each container of recreational motor oil shall contain a statement of its intended use in accordance with the latest version of SAE J300, “Engine Oil Viscosity Classification.”

Section 7. Test Methods and Reproducibility Limits

7.2.3. SAE Viscosity Grades for Engine Oils.—~~All values are critical specifications as defined in the latest version of ASTM D3244, “Standard Practice for Utilization of Test Data to Determine Conformance with Specifications.” The product shall be considered to be in conformance if the Assigned Test Value (ATV) is within the specification. With the exception of the low-temperature cranking viscosity, all values~~

required to define SAE Viscosity Grades, as defined in the latest version of standard SAE J300, “Engine Oil Viscosity Classification”, are critical specifications as defined by the latest version of ASTM D3244.

(Added 2008) **(Amended 20XX)**

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/newm-annual-reports to review these documents.

ITEM BLOCK 4 (B4) METHOD OF SALE REGULATION, SECTION 2.20.2. DOCUMENTATION FOR DISPENSER LABELING PURPOSES. FUELS AND AUTOMOTIVE LUBRICANTS REGULATION, SECTION 1.23. ETHANOL FLEX FUEL, 2.1.2.(B) GASOLINE-ETHANOL BLENDS, AND SECTION 3.2.5. DOCUMENTATION FOR DISPENSER LABELING PURPOSES

(This item was Withdrawn)

B4: MOS-20.2 W Section 2.20.2. Documentation for Dispenser Labeling Purposes
B4: FLR-20.3 W Section 1.23. Ethanol Flex Fuel
B4: FLR-20.6 W Section 2.1.2.(b) Gasoline-Ethanol Blends
B4: FLR-20.7 W Section 3.2.5. Documentation for Dispenser Labeling Purposes

(B4: FLR-20.6, Section 2.1.2.(b) Gasoline-Ethanol Blends and B4: FLR-20.7, Section 3.2.5. Documentation for Dispenser Labeling Purposes appeared in the 2020 NCWM Publication 15 under FLR-20.2. These two sections were removed from that “item under consideration” and merged into this block as it proceeds through the conference.)

Source:

Fuels and Lubricants Subcommittee (original submitter API)

Purpose:

More comprehensively align NIST Handbook 130 Uniform Fuels and Automotive Lubricants Regulations with the U.S. EPA’s rule that grants a 1-psi vapor pressure waiver to E15 for summertime (June 1 to September 15) and to help ensure consumers receive a consistent E15 blend. The proposed changes reflect the regulatory changes finalized by the EPA that revise product transfer document (PTD) requirement for disclosure of the percentage concentration of ethanol in gasoline-ethanol blends, as revised in 40 CFR 80.

B4: MOS-20.2 W Section 2.20.2. Documentation for Dispenser Labeling Purposes.

Item Under Consideration:

Amend NIST Handbook 130, Uniform Regulation for the Method of Sale of Commodities as follows:

2.20.2. Documentation for Dispenser Labeling Purposes. – The retailer shall be provided, at the time of delivery of the fuel, on product transfer documents such as an invoice, bill of lading, shipping paper, or other documentation:

- (a) Information ~~that complies with 40 CFR 80.1503~~ when the fuel contains ethanol as described below.
(Added 2014, Amended 20XX)

- (1) Per 40 CFR 80.1503, For gasoline containing less than 9 volume percent ethanol, the following statement: “EX - Contains up to X% ethanol. The RVP does not exceed [fill in appropriate value] psi.” The term X refers to the maximum volume percent ethanol present in the gasoline.
- (2) Per 40 CFR 80.1503, For gasoline containing 9 or more volume percent ethanol, a conspicuous statement that the gasoline being shipped contains ethanol and the percentage concentration of ethanol as described in 40 CFR 80.27(d)(3).
- (3) To meet the requirements of 40 CFR 80.28(g)(8), for ethanol flex fuel intended for blending with gasoline or gasoline-ethanol blends, to make gasoline containing not more than 15 volume percent ethanol, the following statement: “EXX contains XX% ethanol.” The term XX refers to the volume percent ethanol present.

(Added 20XX)

- (b) For fuels that do not contain ethanol, information that complies with 40 CFR 80.1503 and a declaration of the predominant oxygenate or combination of oxygenates present in concentrations sufficient to yield an oxygen content of at least 1.5 mass percent in the fuel. Where mixtures of only ethers are present, the fuel supplier may identify either the predominant oxygenate in the fuel (i.e., the oxygenate contributing the largest mass percent oxygen) or alternatively, use the phrase “contains MTBE or other ethers.”
- (c) Gasoline containing more than 0.15 mass percent oxygen from methanol shall be identified as “with” or “containing” methanol.

(Added 1984) (Amended 1985, 1986, 1991, 1996, ~~and~~ 2014, and 20XX)

B4: FLR-20.3 W Section 1.23. Ethanol Flex Fuel

Item Under Consideration:

Amend NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation as follows:

1.23. Ethanol Flex Fuel. – Blends of ethanol and hydrocarbons restricted for use as fuel in ground vehicles equipped with flexible-fuel spark-ignition engines. Ethanol Flex Fuel intended for blending with gasoline and gasoline ethanol blends shall contain certified components e.g., blending of ethanol flex fuel containing natural gas liquids is prohibited unless certified consistent with 40 CFR 80.28(g)(8) requirements.

Amended 2014 and 20XX)

B4: FLR-20.6 W Section 2.1.2.(b). Gasoline-Ethanol Blends

2.1.1. Gasoline and Gasoline-Oxygenate Blends (as defined in this regulation). – Shall meet the latest version of ASTM D4814, “Standard Specification for Automotive Spark-Ignition Engine Fuel” except for the permissible offsets for ethanol blends as provided in Section 2.1.2. Gasoline-Ethanol Blends.

- (a) The maximum concentration of oxygenates contained in gasoline-oxygenate blends shall not exceed those permitted by the EPA under Section 211 of the Clean Air Act and applicable waivers.

(Added 2009) (Amended 2018)

2.1.2. Gasoline-Ethanol Blends. – When gasoline is blended with denatured fuel ethanol, the denatured fuel ethanol shall meet the latest version of ASTM D4806, “Standard Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel,” and the blend shall meet the latest

version of ASTM D4814, “Standard Specification for Automotive Spark-Ignition Engine Fuel,” with the following permissible exceptions:

- (a) The maximum vapor pressure shall not exceed the latest edition of ASTM D4814, “Standard Specification for Automotive Spark-Ignition Engine Fuel,” limits by more than 1.0 psi for blends from June 1 through September 15 as allowed by EPA per 40 CFR 80.27(d).

- (b) An ethanol blender, distributor, reseller, carrier, retailer or wholesale purchaser-consumer who exceeds the applicable standard by more than 1.0 psi, shall demonstrate, by showing receipt of a certification from the facility from which the gasoline, gasoline-ethanol blend or ethanol flex fuel blend was received, that the hydrocarbon portion of the blend complies with the Reid vapor pressure and other limitations of 40 CFR 80.27(a), as required in 40 CFR 80.28(g)(8). The certification shall be supported by evidence that the above criteria have been met, such as an oversight program which includes periodic sampling and testing of the gasoline or monitoring the volatility and ethanol content of the gasoline.

(Added 20XX)

(Amended 2016, ~~and~~ 2018, 2019 and 20XX)

NOTE 1: The values shown above appear only in U.S. customary units to ensure that the values are identical to those in ASTM standards and the Environmental Protection Agency regulation.

(Added 2009) (Amended 2012 and 2016)

B4: FLR-20.7 W Section 3.2.5. Documentation for Dispenser Labeling Purposes

3.2.5. Documentation for Dispenser Labeling Purposes. – For automotive gasoline, automotive gasoline oxygenate blends, ethanol flex fuel for blending or racing gasoline, the retailer shall be provided, at the time of delivery of the fuel, on product transfer documents such as an invoice, bill of lading, shipping paper, or other documentation:

- (a) Information ~~that complies with 40 CFR 80.1503~~ when the fuel contains ethanol as described below.

(Added 2014, Amended 20XX)

(1) Per 40 CFR 80.1503, For gasoline containing less than 9 volume percent ethanol, the following statement: “EX - Contains up to X% ethanol. The RVP does not exceed [fill in appropriate value] psi.” The term X refers to the maximum volume percent ethanol present in the gasoline.

(2) Per 40 CFR 80.1503, For gasoline containing 9 or more volume percent ethanol, a conspicuous statement that the gasoline being shipped contains ethanol and the percentage concentration of ethanol as described in 40 CFR 80.27(d)(3).

(3) To meet the requirements of 40 CFR 80.28(g)(8), for ethanol flex fuel intended for blending with gasoline or gasoline-ethanol blends, to make gasoline containing not more than 15 volume percent ethanol, the following statement: “EXX contains XX% ethanol.” The term XX refers to the volume percent ethanol present.

(Added 20XX)

- (b) For fuels that do not contain ethanol, information that complies with 40 CFR 80.1503 and a declaration of the predominant oxygenate or combination of oxygenates present in concentrations sufficient to yield an oxygenate content of at least 1.0 % by volume in the fuel. Where mixtures of only ethers are present, the fuel supplier may identify either the predominant oxygenate in the fuel (i.e., the oxygenate contributing the largest mass percent oxygen) or alternatively, use the phrase “contains MTBE or other ethers.”

(Added 2014)

- (c) Gasoline containing more than 0.3 % by volume methanol shall be identified as “with” or “containing” methanol.

(Added 2014) (Amended 2018)

(Amended 1996, 2014, ~~and~~ 2018 and 20XX)

Background/Discussion:

This item has been assigned to the Fuels and Lubricants Subcommittee for further development. For more information or to provide comment, please contact the subcommittee chair:

Mr. Bill Striejewski

Nevada Department of Agriculture/Bureau of Petroleum Technology

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Aligning NIST Handbook 130 with the important parts of the U.S. EPA rule that grants a 1-psi vapor pressure waiver during the summer months for E15 is important to ensure that E15 has the correct vapor pressure during these months and provides comprehensive information to aid in ensuring compliant E15 gasoline is provided to consumers.

Amend MOS Section 2.20.2.(a)(1) and (2) (there is a “mirrored change” intended for FLR Section 3.2.5.) to address the regulatory changes finalized by the U.S. EPA that revise product transfer document (PTD) requirements for disclosure of the percent concentration of ethanol in gasoline-ethanol blends, as revised in 40 CFR 80.1503.

Amend MOS Section 2.20.2(a)(3) (there is a “mirrored change” intended for FLR Section 3.2.5.) This revision is necessary to reflect the regulatory requirements within 40 CFR 80.28(g)(8) which are newly applicable to E15 since it has been granted the 1.0 psi waiver. The proposed amendment is needed to address the fact that ethanol flex fuel (EFF), which may be used to produce gasoline-oxygenate blends, can have a significant difference in ethanol content depending on season and geography. EFF can range from 51 to 83 volume percent ethanol. A retail gasoline location receiving EFF that will be used for the purpose of producing gasoline-oxygenate blends needs the correct ethanol content information of the EFF. This information is needed in order to adjust the blend ratio to ensure that the fuel is properly blended to meet the requirements that E15 contain at least 10 and not more than 15 volume percent ethanol per 40 CFR 80.1504(e)(3) and to demonstrate the certification requirements within 40 CFR 80.28(g)(8). Accurate blending of E15 from EFF ensures appropriate dispenser labeling which facilitates customer value comparison and provides consumer misfuelling protection. The following bullets from the November 2017 presentation by the Wisconsin Department of Agriculture Trade and Consumer Protection provide additional explanation for why this information is needed.

Selling E15 (slide 24 and 25, www.wpmca.org/assets/ethanol/E15_What_Retailers_Need_to_Know.pdf)

- Blending at the pump can be done using E85 or other high blend ethanol product.
- E85, or flex fuel, is a term that refers to high-level ethanol-gasoline blends containing 51%-83% ethanol, depending on geography and season.
- Because of the range in possible ethanol content of E85, retailers must ensure the blend ratio on all dispensers are set to properly blend for E15 at all times.
- There are two ways to ensure proper blend ratio:
 - Program the dispensers for the maximum ethanol content of the E85/Flex Fuel.
 - Have a service company adjust the blend ratios every time the ethanol content in the E85/Flex Fuel changes.
 - This requires regular monitoring of the ethanol content of the E85/Flex Fuel you are receiving and prompt action when the ethanol content changes
 - If a consumer experiences vehicle damage as a result of fuel being dispensed at a higher ethanol content than what is posted on the dispenser, the retailer is responsible.

Some may argue that the proposed changes are not “new” requirements. However, as demonstrated above these changes are necessary to address the U.S. EPA’s new approach to granting the 1-psi RVP waiver for E15 in the summertime.

Amend NIST Handbook 130 Fuels and Lubricants Regulations Section 1.23. to reflect the modification is needed to address the fact that ethanol flex fuel intended for blending with gasoline and gasoline ethanol blends must contain certified components or each storage tank must be certified before it can be sold as a blendstock for E15. For example, blending of ethanol flex fuel containing natural gas liquids is prohibited unless certified consistent with 40 CFR 80.28(g)(8) requirements.

Amendments to NIST Handbook 130 Fuels and Lubricants Regulations Section 2.1.2.(b) to address the new U.S. EPA approach for E15. For parties in the fuel distribution system, U.S. EPA has reinterpreted the 1-psi allowance for RVP maximum limits in the gasoline distribution system for up to 15% ethanol blends. Parties in the fuel distribution system utilize the “deemed to comply” provision in the U.S. EPA regulations to certify that the fuel sold complies with federal regulations. The Clean Air Act Section 211(h) extends that allowance **only** if parties in the distribution system are deemed to comply, that is, they have evidence that: (1) the hydrocarbon portion meets the RVP limits, (2) the ethanol portion meets its waiver condition and (3) no additional alcohol or other additive has been added to increase the RVP of the ethanol portion of the blend. Specifically, the proposed changes to NIST HB 130 reflect the U.S. EPA language that requires parties in the distribution system seeking to utilize the “deemed to comply” provision to qualify for the 1-psi waiver for ethanol blends from 9 to 15 volume percent, must demonstrate that the gasoline-ethanol blend or hydrocarbon portion of an ethanol flex fuel blend meets RVP requirements per 40 CFR 80.28. Without this language in NIST HB 130, inspectors will not have the full information needed to regulate the fuel and they may not recognize that E15 produced at the pump by blending ethanol flex fuel made with natural gas liquids (NGL) with gasoline-ethanol blends may not qualify for the 1-psi waiver and will likely violate state and federal vapor pressure requirements. Specifically, the EPA final rule indicates that, “..., in order for these fuels to be introduced into commerce, they must be substantially similar to certification fuel or obtain a waiver from the substantially similar requirement.” Further, information that describes the challenges of using NGLs is provided in the list of attachments, Section 20. below).

Some may argue that the proposed changes are not “new” requirements. However, as demonstrated above, the proposed changes to HB 130 are necessary to address the U.S. EPA’s new approach to granting the 1-psi RVP waiver for E15 in the summertime (e.g., 40CFR80.28(g)(8) and (g)(8)(ii) now cover E15 where it previously addressed E10). The EPA has also indicated that the change in rules will result in more manufacturing of E15 at the retail pump and that there will be increased availability and use of the fuel. Consequently, it is appropriate for NCWM to make changes that comprehensively reflect the requirements associated with the manufacturing of E15.

EPA Final rule, “Modifications to Fuel Regulations to Provide Flexibility for E15; Modifications to RFS RIN Market Regulations” June 10, 2019, www.govinfo.gov/content/pkg/FR-2019-06-10/pdf/2019-11653.pdf

U.S. EPA “Modifications to Fuel Regulations to Provide Flexibility for E15; Modifications to RFS RIN Market Regulations: Response to Comments.” June 10, 2019. Added in total with an example provided below.

www.regulations.gov/document?D=EPA-HQ-OAR-2018-0775-1174

p. 53 (Response to comments) E15 is allowed to be blended at blender pumps as long as **only certified components** are used (sic) Cases where blender pumps introduce uncertified components into gasoline continue to be illegal and may result in fuel that exceeds gasoline quality standards. Parties that blend uncertified components into previously certified gasoline are considered fuel manufacturers under the regulations at 40 CFR part 79 and refiners under 40 CFR part 80. (emphasis added)

The following quotes from the U.S. EPA proposal provide additional information:

- **40 CFR 80.27(d)** *Special provisions for alcohol blends.*

- (1) Any gasoline which meets the requirements of paragraph (d)(2) of this section shall not be in violation of this section if its Reid vapor pressure does not exceed the applicable standard in paragraph (a) of this section by more than one pound per square inch (1.0 psi).
- (2) In order to qualify for the special regulatory treatment specified in paragraph (d)(1) of this section, gasoline must contain denatured, anhydrous ethanol. **The concentration of the ethanol, excluding the required denaturing agent, must be at least 9% and no more than 15% (by volume) of the gasoline.** The ethanol content of the gasoline shall be determined by the use of one of the testing methodologies specified in § 80.47. The maximum ethanol content shall not exceed any applicable waiver conditions under section 211(f) of the Clean Air Act.
- (3) **Each invoice, loading ticket, bill of lading, delivery ticket and other document which accompanies a shipment of gasoline containing ethanol shall contain a legible and conspicuous statement that the gasoline being shipped contains ethanol and the percentage concentration of ethanol.**

(emphasis added)

- **40 CFR 80.28(g) Defenses.**

- (8) In addition to the defenses provided in paragraphs (g)(1) through (6) of this section, in any case in which an ethanol blender, distributor, reseller, carrier, retailer, or wholesale purchaser-consumer would be in violation under paragraph (b), (c), (d), (e), or (f) of this section, as a result of gasoline which contains between 9 and 15 percent ethanol (by volume) but exceeds the applicable standard by more than one pound per square inch (1.0 psi), the ethanol blender, distributor, reseller, carrier, retailer or wholesale purchaser-consumer **shall not be deemed in violation if such person can demonstrate, by showing receipt of a certification from the facility from which the gasoline was received or other evidence acceptable to the Administrator,** that:
 - (i) **The gasoline portion of the blend complies with the Reid vapor pressure limitations of § 80.27(a); and**
 - (ii) **The ethanol portion of the blend does not exceed 15 percent (by volume); and**
 - (iii) **No additional alcohol or other additive has been added to increase the Reid vapor pressure of the ethanol portion of the blend.**

In the case of a violation alleged against an ethanol blender, distributor, reseller, or carrier, if the demonstration required by paragraphs (g)(8)(i), (ii), and (iii) of this section is made by a certification, it must be supported by evidence that the criteria in paragraphs (g)(8)(i), (ii), and (iii) of this section have been met, such as an oversight program conducted by or on behalf of the ethanol blender, distributor, reseller or carrier alleged to be in violation, which includes periodic sampling and testing of the gasoline or monitoring the volatility and ethanol content of the gasoline. Such certification shall be deemed sufficient evidence of compliance provided it is not contradicted by specific evidence, such as testing results, and provided that the party has no other reasonable basis to believe that the facts stated in the certification are inaccurate. **In the case of a violation alleged against a retail outlet or wholesale purchaser-consumer facility, such certification shall be deemed an adequate defense for the retailer or wholesale purchaser-consumer, provided that the retailer or wholesale purchaser-consumer is able to show certificates for all of the gasoline contained in the storage tank found in violation, and, provided that the retailer or wholesale purchaser-consumer has no reasonable basis to believe that the facts stated in the certifications are inaccurate.**

(emphasis added)

- **40 CFR 80.1503** *What are the product transfer document requirements for gasoline-ethanol blends, gasolines, and conventional blendstocks for oxygenate blending subject to this subpart?*

- (a) Product transfer documentation for conventional blendstock for oxygenate blending, or gasoline transferred upstream of an ethanol blending facility.
 - (1) In addition to any other product transfer document requirements under 40 CFR part 80, on each occasion after October 31, 2011, when any person transfers custody or title to any conventional blendstock for oxygenate blending which could become conventional gasoline solely upon the addition of ethanol, or gasoline upstream of an oxygenate blending facility, as defined in § 80.2(ll), the transferor shall provide to the transferee product transfer documents which include the following information:
 - (i) The name and address of the transferor;
 - (ii) The name and address of the transferee;
 - (iii) The volume of conventional blendstock for oxygenate blending or gasoline being transferred;
 - (iv) The location of the conventional blendstock for oxygenate blending or gasoline at the time of the transfer;
 - (v) The date of the transfer;
 - (vi) For gasoline during the regulatory control periods defined in § 80.27(a)(2)(ii) or any SIP approved or promulgated under §§ 110 or 172 of the Clean Air Act:
 - (A) The maximum RVP, as determined by a method permitted under § 80.46(c), stated in the following format: “The RVP of this gasoline does not exceed [fill in appropriate value]”; and
 - (B) The conspicuous statement that the gasoline being shipped contains ethanol and the percentage concentration of ethanol as described in § 80.27(d)(3).
 - (2) The requirements in paragraph (a)(1) of this section do not apply to reformulated gasoline blendstock for oxygenate blending, as defined in § 80.2(kk), which is subject to the product transfer document requirements of §§ 80.69 and 80.77.
 - (3) Except for transfers to truck carriers, retailers, or wholesale purchaser-consumers, product codes may be used to convey the information required under paragraph (a)(1) of this section if such codes are clearly understood by each transferee.
- (b) Product transfer documentation for gasoline transferred downstream of an oxygenate blending facility.
 - (1) In addition to any other product transfer document requirements under 40 CFR part 80, on each occasion after October 31, 2011, when any person transfers custody or title to any gasoline-ethanol blend downstream of an oxygenate blending facility, as defined in § 80.2(ll), except for transfers to the ultimate consumer, the transferor shall provide to the transferee product transfer documents which include the following information:
 - (i) The name and address of the transferor;
 - (ii) The name and address of the transferee;
 - (iii) The volume of gasoline being transferred;
 - (iv) The location of the gasoline at the time of the transfer;

- (v) The date of the transfer; and
- (vi) One of the statements detailed in paragraph (b)(1)(vi)(A) though (E) which accurately describes the gasoline-ethanol blend. The information regarding the ethanol content of the fuel is required year-round. The information regarding the RVP of the fuel is only required for gasoline during the regulatory control periods.
 - (A) For gasoline containing no ethanol (E0), the following statement; “E0: Contains no ethanol. The RVP does not exceed [fill in appropriate value] psi.”
 - (B) (1) **For gasoline containing less than 9 volume percent ethanol, the following statement: “EX - Contains up to X% ethanol. The RVP does not exceed [fill in appropriate value] psi.” The term X refers to the maximum volume percent ethanol present in the gasoline.**
 - (2) **The conspicuous statement that the gasoline being shipped contains ethanol and the percentage concentration of ethanol as described in § 80.27(d)(3)** may be used in lieu of the statement required under paragraph (b)(1)(vi)(B)(1) of this section.
- (2) Except for transfers to truck carriers, retailers, or wholesale purchaser-consumers, product codes may be used to convey the information required under paragraph (b)(1) of this section if such codes are clearly understood by each transferee.
- (c) The records required by this section must be kept by the transferor and transferee for five (5) years from the date they were created or received by each party in the distribution system.
- (d) On request by EPA, the records required by this section must be made available to the Administrator or the Administrator's authorized representative. For records that are electronically generated or maintained, the equipment or software necessary to read the records shall be made available, or, if requested by EPA, electronic records shall be converted to paper documents.

[76 FR 44443, July 25, 2011, as amended at 79 FR 42167, July 18, 2014; 84 FR 27025, June 10, 2019]
(emphasis added)

On January 17, 2020, Mr. Searles submitted modified language for Section 2.1.2.(a). Gasoline-Ethanol Blends. There were over ten letters received in opposition for Items MOS-20.2 Documentation for Dispenser Labeling Purposes and FLR 20.3. Section 1.23. Ethanol Flex Fuel language. Many were opposed due to its duplication with the EPA compliance program for this subject

At the 2020 NCWM Interim Meeting, Mr. Searles provided a presentation and requested from the floor that Section 2.1.2.(a) Gasoline-Ethanol Blends be considered as a Voting item and he volunteered to chair a workgroup to further develop the remaining items. Many rose in support and opposition of this block of items. It was addressed by Ms. Warfield (NIST) that FALS was tasked by the L&R Committee in July 2019 to review the EPA language and its impact on the NIST Handbook 130, Fuels Regulations. FALS Chair Striejewski remarked that he has created a FG but needs additional clarification from the Committee on what specifically they should address.

During Committee work session they concurred that Section 2.1.2.(a). Gasoline-Ethanol Blends will proceed as a Voting item. All the remaining items will be merged into Block 4 and be assigned to FALS for further development.

At the 2021 NCWM Interim Meeting, Mr. Searles requested that this item be withdrawn if it is not given an Assigned status to be further developed by FALS. Mr. Searles did agree to lead a task group to review the language and align with the EPA Streamlining regulations. Mr. Charlie Stutesman (Kansas) requested that this item be withdrawn considering the EPA Streamlining regulations.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the 2019 WWMA Annual Meeting, a presentation provided by Mr. Joe Sorena (representing API). Mr. Kevin Adlaf (Archer Daniels Midland [ADM]) remarked the CFR covered this information and state regulators would start enforcing EPA requirements. Is there any data showing that this is needed? Ms. Jacki Fee (Cargill) also concurred this would be placing the EPA regulations within the States’ hands; for this reason, she recommended this item Withdrawn. Mr. Steven Harrington (Oregon) indicated that it is useful to have the certain critical elements within the handbook and encouraged further review and development. Ms. Rebecca Richardson (NBB) questioned whether this was being driven by a consumer issue and what is the premise for this proposal? It was mentioned that FALS was tasked with doing a review of both NIST Handbook 130 regulations and the EPA rule. Ms. Kristy Moore (Growth Energy) stated that it is a complex proposal with significant scope. There are considerable references to product transfer documents (PTD) throughout the EPA rule, this only extracts one. Ms. Moore believed if you’re extracting one reference then you should extract all. Ms. Moore believes that that current language is enough and recommends this item be withdrawn. Mr. Matt Sheehan (Chevron) stated the purpose of the modification was to provide information to retail sites and the EPA rules in the Clean Air Act are complicated. This is needed so retailers can understand the ethanol content in gasoline and consumers understand what they are purchasing. Ms. Michelle Wilson (Arizona) remarked that they require PTDs to document the amount of ethanol and recommended this be assigned to FALS.

The Committee recommended this as an Assigned item with an evaluation by FALS, if the proposal is warranted and to address comments heard during open hearings. They would like FALS to provide a recommendation to NCWM L&R.

At the 2019 SWMA Annual Meeting, Mr. Russ Lewis (representing API) provided a presentation (on the NCWM L&R supporting documents). There was considerable discussion for the pros and cons of this proposal.

The Committee did not have enough fuels expertise but concurred this is an important topic. They would like to see the product coming through the nozzle have the specifications that are posted. Consumers need to know what they are getting. They are not sure how it will affect the regulator’s role in implementing this regulation. The Committee would like this item to be sent to FALS where the subject matter experts (SME’s) can provide their technical expertise.

At the 2019 NEWMA Interim Meeting, Mr. Bill Hornbach (representing Chevron and API), provided a presentation regarding this item. L&R Chair Sakin read comments submitted from Ms. Moore during WWMA Annual Meeting Open Hearings. Ms. Moore statement read that this item as it appears in NIST Handbook 130 is enough, and the proposal should be withdrawn because it places unfair rules on ethanol and not on other fuels. Mr. Adlaf commented that transfer documents (PTD) are not new, and believed that having these provisions in place will not guarantee the finished fuel will meet spec. Ms. Fee opposed the item and believes the proposal should be withdrawn. Due to its technical complexity, the Committee believed the item should be assigned to FALS for further consideration.

At the 2020 CWMA Interim Meeting, Mr. Stutesman commented that he believes this item should continue to develop through FALS. Ms. Moore believed this item should be withdrawn. She did not believe EPA regulations should appear in NIST Handbook 130. The Committee recommended this item remain Assigned to FALS.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/newm-annual-reports to review these documents.

ITEM BLOCK 5 (B5) METHOD OF SALE OF COMMODITIES AND FUELS AND AUTOMOTIVE LUBRICANTS REGULATIONS, BACK- GROUND INFORMATION

(This Block of items was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert’s Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. These items appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting.

B5: MOS-18.2. VC Method of Sale Regulation – 1. Background information

B5: FLR-20.4 VC Fuels and Automotive Lubricants Regulation – 1. Background Information

(MOS-18.2. appeared in NCWM Publication 15 (2020) as a standalone item. B5: FLR-20.4 did not appear in the publication and was created by the Committee during its work session).

Source:

Fuels and Lubricants Subcommittee (original submitter Archer Daniels Midland Corporation [ADM])

Purpose:

The current purpose is to add to the information in the background sections of Method of Sale of Commodities Regulation and Fuels and Automotive lubricants Regulation to inform the user that there are the same regulations found in both sections, and that due to the way some states adopt the handbooks that this duplication is needed.

- Acknowledge the continuing presence and need on the information in two locations
- Efforts to maintain consistent information in both locations.
- History for the fuel and automotive related products in the Method of Sale regulations can be found in the background section for Fuels and Automotive Lubricants Regulation.

Note: The original proposal was submitted by Archer Daniels Midland (ADM) it was to harmonize the Uniform Regulation for the Method of Sale of Commodities and the Uniform Fuels and Automotive Lubricants Regulation by starting with method of sale for kerosene. After a lengthy process and many significant revisions, it was decided to only put forward changes to the Background section to assist the user.

B5: MOS-18.2 V Method of Sale of Commodities – 1. Background Information

Item Under Consideration:

Amend NIST Handbook 130, Uniform Method of Sale of Commodities, 1. Background information.

1. Background

The National Conference on Weights and Measures (NCWM) has long been concerned with the proper units of measurement to be used in the sale of all commodities. This approach has gradually broadened to concerns of standardized package sizes and general identity of particular commodities. Requirements for individual products were at one time made a part of the Weights and Measures Law or were embodied in separate individual Model Regulations. In 1971, this “Model State Method of Sale of Commodities Regulation” was established (renamed in 1983); amendments have been adopted by the Conference almost annually since that time.

Sections with “added 1971” dates refer to those sections that were originally incorporated in the Weights and Measures Law or in individual Model Regulations recommended by the NCWM. Subsequent dates reflect the actual amendment or addition dates.

The 1979 edition included, for the first time, requirements for items packaged in quantities of the International System of Units (SI), the modernized metric system, as well as continuing to present requirements for U.S. customary

quantities. It should be stressed that nothing in this Regulation requires changing to the SI system of measurement. SI values are given for the guidance of those wishing to adopt new SI quantities of the commodities governed by this Regulation. SI means the International System of Units as established in 1960 by the General Conference on Weights and Measures and interpreted or modified for the United States by the Secretary of Commerce.

This Regulation assimilates all of the actions periodically taken by the Conference with respect to certain food items, non-food items, and general method of sale concepts. Its format is such that it will permit the addition of individual items at the end of appropriate sections as the need arises. Its adoption as a regulation by individual jurisdictions will eliminate the necessity for legislative consideration of changes in the method of sale of particular commodities. Such items will be able to be handled through the normal regulation-making process.

The Conference recognized that some states may only adopt the Method of Sale of Commodities Regulation but have the legal authority in their weights and measures law to also regulate and take enforcement action in the areas of fuels and related products. For this reason, the user will find fuels and related products within this regulation. A brief summary related to the development of regulations on these products can be found in the Background information of the Uniform Fuels and Automotive Lubricants Regulation. Efforts have been made when practical to align both regulations.

(Amended 2021)

B5: FLR-20.4 V Fuels and Automotive Lubricants Regulation – 1. Background Information

Item Under Consideration:

Amend NIST Handbook 130, Fuels and Automotive Lubricants Regulation, 1. Background information.

1. Background

In 1984, the National Conference on Weights and Measures (NCWM) adopted a Section 2.20. in the Uniform Regulation for the Method of Sale of Commodities requiring that motor fuels containing alcohol be labeled to disclose to the retail purchaser that the fuel contains alcohol. The delegates deemed this action necessary since motor vehicle manufacturers were qualifying their warranties with respect to some gasoline-alcohol blends, motor fuel users were complaining to weights and measures officials about fuel quality and vehicle performance, and ASTM International (ASTM) had not yet finalized quality standards for oxygenated (which includes alcohol-containing) fuels. While a few officials argued weights and measures officials should not cross the line from quantity assurance programs to programs regulating quality, the delegates were persuaded that the issue needed immediate attention.

A Motor Fuels Task Force was appointed in 1984 to develop mechanisms for achieving uniformity in the evaluation and regulation of motor fuels. The Task Force developed the Uniform Motor Fuel Inspection Law (see the Uniform Engine Fuels and Automotive Lubricants Inspection Law section of this handbook) and the Uniform Engine Fuel and Automotive Lubricants Regulation to accompany the law. The Uniform Law required registration and certification of motor fuel as meeting ASTM standards. The regulation defined the ASTM standards to be applied to motor fuel.

In 1992, the NCWM established the Petroleum Subcommittee under the Laws and Regulations Committee. The subcommittee recommended major revisions to the Regulation that was adopted at the 80th NCWM in 1995. The scope of the regulation was expanded to include all engine fuels, petroleum products, and automotive lubricants; its title was changed; accordingly, and the fuel specifications and method of sale sections were revised to address the additional products. Other changes included expansion of the definitions section and addition of sections on retail storage tanks, condemned product, registration of engine fuels designed for special use, and test methods and reproducibility limits.

In 2007, the Petroleum Subcommittee (now referred to as the Fuels and Lubricants Subcommittee) undertook a review of this regulation to update it by eliminating reference to “petroleum products” and to reflect the addition of new engine fuels to the marketplace. The regulation continues to be updated to incorporate new regulatory requirements and other key changes.

Even after the inclusion of the Uniform Regulation for Motor Fuel and Automotive Lubricants into NIST Handbook 130, the Conference recognized that more states adopt the Uniform Regulation for the Method of Sale of Commodities than adopt the Uniform Fuel and Automotive Lubricants Regulation. To promote uniformity in state regulations a number of these regulations continue to be included in both regulations

(Amended 2018 and 2021)

Background/Discussion:

The Method of Sale of Commodities and the Uniform Fuels and Automotive Lubricants Regulations have different information for the method of sale for kerosene, liquefied petroleum gas, natural gas fuels, and diesel exhaust fluid. This proposal is to integrate the information from both regulations to create identical method of sale language in the two regulations.

Information for the method of sale for fuels, lubricants and automotive products currently can appear in NIST Handbook in either the Uniform Regulation for the Method of Sale of Commodities and the Uniform Fuels and Automotive Lubricants Regulation. Sometimes the information for the same product is different in the two regulations which creates an added burden when maintaining and updating the handbook. This proposal is to consolidate and reorganize that information into the Uniform regulation for the Method of Sale of Commodities. This proposal is not intended to modify a specific method of sale. Those modifications should be considered separately by product.

At the 2018 Interim Meeting, Mr. Chuck Corr (ADM) spoke on behalf of a work group under FALS and provided an overview of the Block 2 agenda items. Mr. Corr stated the intent of this item is to reorganize and harmonize language only, and not to make any substantial changes to the language. FALS Chair Striejewske commented that FALS discussed these agenda items during their meeting and had concerns about possible conflicts between this item and the NIST Handbook 130 working group (Item FLR-9). Mr. Timothy Elliott (Washington) commented that all state officials review the proposed language for possible conflicts with state regulations. Mr. Mike Sikula (New York) commented that there is inconsistency between FTC language within 16 CFR 306 and this proposed language related to past editions of the NIST Handbook 130. Mr. Sikula stated that NIST Handbook 130 suggests the most current version of the regulation, and FTC references a specific version. Mr. Sikula believes this inconsistency should be resolved prior to adoption. For these reasons, the L&R Committee decided to Assign this block of items to FALS for further work.

At the 2018 NCWM Annual Meeting, FALS Chair Striejewske updated the Committee that this item had undergone a major overhaul within the last six months. The submitter is currently contacting each state to see how it impacts their state. It was noted that if L&R Item FLR-9 was adopted, Sections of this item would need to be updated to reflect the most recent language as it moves forward.

FALS agreed to replace the Method of Sale and Fuels and Lubricants language that was developed at the 2018 Fall Regional Meetings. This developed language appeared in the 2019 NCWM Publication 15.

At the 2019 NCWM Interim Meeting, comments from regulators and associate members within FALS indicated that they believed FRL-1 to be fully developed and ready to for a Vote, while recognizing that further development is needed regarding item MOS-1. After reviewing the comments, the Committee did not assign the same status to both items and they were removed as being a blocked item. Item FLR-1 is recommended as a Voting item while MOS-1 is assigned back to FALS for additional development.

At the 2019 NCWM Annual Meeting, FALS Chair Striejewske reported that work on this item continues within FALS. Mr. Elliott remarked that this item does not delete anything but moves things around. Items are being moved from non-food into fuels. A controversial item is a listing of items sold by liquid measure and why they are specified. Mr. Elliott would like feedback from the regions as they review this item. This Item has been assigned to FALS to be further developed to move all Fuels, Lubricants, and Automotive Products from “Section 2. Non-Food Products”, to a create a subsection of Section 2 titled “Fuels, Lubricants, and automotive products” and add a reference in the new section for definitions, specifications, and identifications. In addition, a reference will to the Method of Sale Law to individual items missing a method of sale. Due to the number of changes editorial privileges will be required to allow for proper renumbering of regulations within the section. This item will have modifications for the 2019 Fall Regional Association agendas.

At the 2020 NCWM Interim Meeting, an update was heard that the entire item under consideration for Item MOS-18.2. was being replaced with new language that adds a paragraph to the “Background” information under the Method of Sale. This paragraph will include a history of fuels and related products within this regulation. The latest language for consideration was submitted on January 20, 2020, as a supporting document.

FALS Chair Striejewske reviewed the modified language and believed it did not need the technical guidance of FALS and recommended it go back to the L&R for consideration. Ms. Lisa Warfield (NIST OWM) had submitted comments and revised language to the Committee. The Committee concurred with the recommendation from NIST that language should also be included within the Fuels and Lubricants Regulation. During the L&R Committee work session they developed language using language recommendations that were submitted. The Committee also consulted with Mr. Elliott and Mr. Corr, who developed the initial proposal for consideration, and they concurred with the Committee’s modified recommendation and agreed this was fully developed and ready as a Voting item.

At the 2020 NCWM Annual Meeting, Mr. Corr spoke that the last line in the background section of the Method of Sale required some clarification. Mr. Corr had concerns there may be some differences in the regulations because of the way the states utilize the handbook regulations. Several regulators supported the block as written. For clarity the Committee reworded the last sentence by replacing the word “possible” with “practical” and added the word “both” before regulations. The Committee deemed these as editorial changes to provide clarity and the modified language proceeded to Vote.

The item under consideration as it NCWM Publication 15 - NCWM Interim Meeting appears below:

B. Uniform Regulation for the Method of Sale of Commodities

1. Background

The National Conference on Weights and Measures (NCWM) has long been concerned with the proper units of measurement to be used in the sale of all commodities. This approach has gradually been broadened to concerns of standardized package sizes and general identity of particular commodities. Requirements for individual products were at one time made a part of the Weights and Measures Law or were embodied in separate individual Model Regulations. In 1971, this “Model State Method of Sale of Commodities Regulation” was established (renamed in 1983); amendments have been adopted by the Conference almost annually since that time.

Sections with “added 1971” dates refer to those sections that were originally incorporated in the Weights and Measures Law or in individual Model Regulations recommended by the NCWM. Subsequent dates reflect the actual amendment or addition dates.

The 1979 edition included, for the first time, requirements for items packaged in quantities of the International System of Units (SI), the modernized metric system, as well as continuing to present requirements for U.S. customary quantities. It should be stressed that nothing in this Regulation requires changing to the SI system of measurement. SI values are given for the guidance of those wishing to adopt new SI quantities of the commodities governed by this Regulation. SI means the International System of Units as established in 1960 by the General Conference on Weights and Measures and interpreted or modified for the United States by the Secretary of Commerce.

In 1984 the NCWM adopted a section in the Uniform Regulation for the Method of Sale of Commodities requiring that motor fuel containing alcohol be labeled to disclose to the retail purchaser that the fuel contains alcohol. The delegates deemed this action necessary since motor vehicle manufacturers were qualifying their warranties with respect to some gasoline-alcohol blends, motor fuel users were complaining to weights and measures officials about fuel quality and vehicle performance, and the American Society for Testing and Materials (ASTM) had not yet finalized quality standards for oxygenated (which includes alcohol-containing) fuels. While many argued that weights and measures officials should not cross the line from quantity assurance programs to programs regulating quality, the delegates were persuaded that the issue needed immediate attention. (See NIST Handbook 130, Uniform Fuels and Automotive Lubricants Inspection Law)

A Motor Fuels Task Force was appointed in 1984 to develop mechanisms for achieving uniformity in the evaluation and regulation of motor fuels. The Task Force developed the Uniform Motor Fuel Inspection Law (NIST Handbook 130, Uniform Fuels and Automotive Lubricants Inspection Law) and the Uniform Fuel and Automotive Lubricants Regulation to accompany the law. The Uniform Regulation for Fuels and Automotive Lubricants was adopted by the NCWM in 1995. (See NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation.)

In 20XX the NCWM determined that the fuels, lubricants, and related products should be consolidated within the non-food products section. For products that did not have a method of sale listed a reference to the method of sale law was added.

This Regulation assimilates all the actions periodically taken by the Conference with respect to certain food items, non-food items, and general method of sale concepts. Its format is such that it will permit the addition of individual items at the end of appropriate sections as the need arises. Its adoption as a regulation by individual jurisdictions will eliminate the necessity for legislative consideration of changes in the method of sale of particular commodities. Such items will be able to be handled through the normal regulation-making process.

2. Status of Promulgation

The table beginning on page 6 shows the status of adoption of the Uniform Regulation for the Method of Sale of Commodities.

*The National Conference on Weights and Measures (NCWM) is supported by the National Institute of Standards and Technology (NIST) in partial implementation of its statutory responsibility for “cooperation with the states in securing uniformity in weights and measures laws and methods of inspection.”

Section 2. Non-Food Products [NOTE 1, page 103]

2.19. Kerosene (Kerosine). ~~All kerosene kept, offered, exposed for sale, or sold shall be identified as such and will include, with the word kerosene, an indication of its compliance with the latest version of the standard specification ASTM Standard D3699, “Standard Specification for Kerosine.”~~

Example:

1K Kerosene; Kerosene – 2K.

(Added 1983)

2.19.1. Retail Sale from Bulk. ~~All kerosene kept, offered, or exposed for sale and sold from bulk at retail shall be in terms of the gallon or liter.~~

(Added 2012)

2.20. Gasoline Oxygenate Blends.

2.20.1. Method of Retail Sale. Type of Oxygenate must be Disclosed. ~~All automotive gasoline or automotive gasoline oxygenate blends kept, offered, or exposed for sale, or sold at retail containing at least 1.5 mass percent oxygen shall be identified as “with” or “containing” (or similar wording) the predominant oxygenate in the engine fuel. For example, the label may read “contains ethanol” or “with MTBE.” The oxygenate contributing the largest mass percent oxygen to the blend shall be considered the predominant oxygenate. Where mixtures of only ethers are present, the retailer may post the predominant oxygenate followed by the phrase “or other ethers” or alternatively post the phrase “contains MTBE or other ethers.” In addition, gasoline methanol blend fuels containing more than 0.15 mass percent oxygen from methanol shall be identified as “with” or “containing” methanol. This information shall be posted on the upper 50 % of the dispenser front panel in a position clear and conspicuous from the driver’s position in a type at least 12.7 mm (½ in) in height, 1.5 mm (⅛ in) stroke (width of type).~~

(Amended 1996)

~~2.20.2. Documentation for Dispenser Labeling Purposes.—The retailer shall be provided, at the time of delivery of the fuel, on product transfer documents such as an invoice, bill of lading, shipping paper, or other documentation:~~

~~(a) Information that complies with 40 CFR 80.1503 when the fuel contains ethanol.~~

~~(b) For fuels that do not contain ethanol, information that complies with 40 CFR 80.1503 and a declaration of the predominant oxygenate or combination of oxygenates present in concentrations sufficient to yield an oxygen content of at least 1.5 mass percent in the fuel. Where mixtures of only ethers are present, the fuel supplier may identify either the predominant oxygenate in the fuel (i.e., the oxygenate contributing the largest mass percent oxygen) or alternatively, use the phrase “contains MTBE or other ethers.”~~

~~(c) Gasoline containing more than 0.15 mass percent oxygen from methanol shall be identified as “with” or “containing” methanol.~~

~~(Added 1984) (Amended 1985, 1986, 1991, 1996, and 2014)~~

~~2.20.3. EPA Labeling Requirements.—Retailers and wholesale purchaser-consumers of gasoline shall comply with the EPA pump labeling requirements for gasoline containing greater than 10 volume percent (v%) up to 15 volume percent (v%) ethanol (E15) under 40 CFR 80.1501. (For additional information, refer to Section 2.30.2. FTC Labeling Requirements.)~~

~~(Added 2018)~~

~~2.21. Liquefied Petroleum Gas.—All liquefied petroleum gas, including, but not limited to propane, butane, and mixtures thereof, shall be kept, offered, exposed for sale, or sold by the pound, metered cubic foot^{NOTE 7, page 1311} of vapor (defined as 1 ft³ at 60 °F [15.6 °C]), or the gallon (defined as 231 in³ at 60 °F [15.6 °C]). All metered sales by the gallon, except those using meters with a maximum rated capacity of 20 gal/min or less, shall be accomplished by use of a meter and device that automatically compensates for temperature.~~

~~(Added 1986)~~

~~NOTE 7: Sources: American National Standards Institute, Inc., “American National Standard for Gas Displacement Meters (500 Cubic Feet per Hour Capacity and Under),” First edition, 1974, and NIST Handbook 44, “Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices.”~~

~~2.27. Retail Sales of Natural Gas Sold as a Vehicle Fuel.~~

~~2.27.1. Definitions.~~

~~2.27.1.1. Compressed Natural Gas (CNG).—A gaseous fuel composed primarily of methane that is suitable for compression and dispensing into a fuel storage container(s) for use as an engine fuel.~~

~~(Amended 2016)~~

~~2.27.1.2. Gasoline Gallon Equivalent (GGE).—Gasoline gallon equivalent (GGE) means 2.567 kg (5.660 lb) of compressed natural gas.~~

~~(Amended 2016)~~

~~2.27.1.3. Diesel Gallon Equivalent (DGE).—Diesel gallon equivalent means 6.384 lb of compressed natural gas or 6.059 lb of liquefied natural gas.~~

~~(Added 2016)~~

~~2.27.1.4. Liquefied Natural Gas (LNG).—Natural gas, which is predominantly methane, that has been liquefied at 162 °C (–260 °F) at 14.696 psia and stored in insulated cryogenic fuel storage tanks for use as an engine fuel.~~

~~(Added 2016)~~

2.27.2. Method of Retail Sale and Dispenser Labeling.

~~2.27.2.1. Method of Retail Sale for Compressed Natural Gas.—All compressed natural gas kept, offered, or exposed for sale and sold at retail as a vehicle fuel shall be measured in terms of mass, and indicated in the gasoline gallon equivalent (GGE), diesel gallon equivalent (DGE) units, or mass.~~

~~(Amended 2016)~~

~~2.27.2.2. Dispenser Labeling Compressed Natural Gas.—All retail compressed natural gas dispensers shall be labeled with the equivalent conversion factor in terms of pounds (lb). The label shall be permanently and conspicuously displayed on the face of the dispenser and shall have the statement “1 Gasoline Gallon Equivalent (GGE) means 5.660 lb of Compressed Natural Gas” or “1 Diesel Gallon Equivalent (DGE) means 6.384 lb of Compressed Natural Gas” consistent with the method of sale used.~~

~~(Amended 2016)~~

~~2.27.2.3. Method of Retail Sale for Liquefied Natural Gas.—All liquefied natural gas kept, offered, or exposed for sale and sold at retail as a vehicle fuel shall be measured in mass and indicated in diesel gallon equivalent (DGE) units or mass.~~

~~(Added 2016)~~

~~2.27.2.4. Dispenser Labeling of Retail Liquefied Natural Gas.—All retail liquefied natural gas dispensers shall be labeled with the equivalent conversion factor in terms of pounds (lb). The label shall be permanently and conspicuously displayed on the face of the dispenser and shall have the statement “1 Diesel Gallon Equivalent (DGE) means 6.059 lb of Liquefied Natural Gas.”~~

~~(Added 2016)~~

2.30. Ethanol Flex Fuel.

~~2.30.1. How to Identify Ethanol Flex Fuel.—Ethanol flex fuel shall be identified as “Ethanol Flex Fuel or EXX Flex Fuel.”~~

~~2.30.2. FTC Labeling Requirements.—Ethanol flex fuel shall be identified and labeled in accordance with the Federal Trade Commission Automotive Fuel Ratings, Certification and Posting Rule, 16 CFR 306, as amended. (For additional information, refer to Section 2.20.3. EPA Labeling Requirements.)~~

~~(Added 2007) (Amended 2014 and 2018)~~

2.31. Biodiesel and Biodiesel Blends.

~~2.31.1. Identification of Product.—Biodiesel shall be identified by the term “Biodiesel” with the designation “B100.” Biodiesel Blends shall be identified by the term “Biodiesel Blend.”~~

2.31.2. Labeling of Retail Dispensers.

~~2.31.2.1. Labeling of Grade Required.—Biodiesel shall be identified by the grades S15 or S500. biodiesel blends shall be identified by the grades No. 1 D, No. 2 D, or No. 4 D.~~

~~2.31.2.2. EPA Labeling Requirements Also Apply.—Retailers and wholesale purchaser consumers of biodiesel blends shall comply with EPA pump labeling requirements for sulfur under 40 CFR 80.570.~~

~~2.31.2.3. Automotive Fuel Rating.—Biodiesel and biodiesel blends shall be labeled with its automotive fuel rating in accordance with 16 CFR 306.~~

~~2.31.2.4. Biodiesel Blends.—When biodiesel blends greater than 20 % by volume are offered by sale, each side of the dispenser where fuel can be delivered shall have a label conspicuously placed that states “Consult Vehicle Manufacturer Fuel Recommendations.” The lettering of this legend shall not~~

~~be less than 6 mm ($\frac{1}{4}$ in) in height by 0.8 mm ($\frac{1}{32}$ in) stroke; block style letters and the color shall be in definite contrast to the background color to which it is applied.~~

~~2.31.3. Documentation for Dispenser Labeling Purposes.—The retailer shall be provided, at the time of delivery of the fuel, a declaration of the volume percent biodiesel on an invoice, bill of lading, shipping paper, or other document. This documentation is for dispenser labeling purposes only; it is the responsibility of any potential blender to determine the amount of biodiesel in the diesel fuel prior to blending.~~

~~2.31.4. Exemption.—Biodiesel blends that contain less than or equal to 5 % biodiesel by volume are exempt from the requirements of Sections 2.31.1. Identification of Product, 2.31.2. Labeling of Retail Dispensers, and 2.31.3. Documentation for Dispenser Labeling Purposes when it is sold as diesel fuel.~~

(Added 2008)

~~2.32. Retail Sales of Hydrogen Fuel (H).~~

~~2.32.1. Definitions for Hydrogen Fuel.—A fuel composed of molecular hydrogen intended for consumption in a surface vehicle or electricity production device with an internal combustion engine or fuel cell.~~

(Amended 2012)

~~2.32.2. Method of Retail Sale and Dispenser Labeling.—All hydrogen fuel kept, offered, or exposed for sale and sold at retail shall be in mass units in terms of the kilogram. The symbol for hydrogen vehicle fuel shall be the capital letter “H” (the word Hydrogen may also be used).~~

~~2.32.3. Retail Dispenser Labeling.~~

~~(a) A computing dispenser must display the unit price in whole cents on the basis of price per kilogram.~~

~~(b) The service pressure(s) of the dispenser must be conspicuously shown on the user interface in bar or the SI unit of pascal (Pa) (e.g., MPa).~~

~~(c) The product identity must be shown in a conspicuous location on the dispenser.~~

~~(d) National Fire Protection Association (NFPA) labeling requirements also apply.~~

~~(e) Hydrogen shall be labeled in accordance with 16 CFR 309—FTC Labeling Alternative Fuels.~~

~~2.32.4. Street Sign Prices and Advertisements.~~

~~(a) The unit price must be in terms of price per kilogram in whole cents (e.g., \$3.49 per kg, not \$3.499 per kg).~~

~~(b) The sign or advertisement must include the service pressure (expressed in megapascals) at which the dispenser(s) delivers hydrogen fuel (e.g., H35 or H70).~~

(Added 2010)

~~2.33. Oil.~~

~~2.33.1. Labeling of Vehicle Engine (Motor) Oil.—Vehicle engine (motor) oil shall be labeled.~~

~~2.33.1.1. Viscosity. The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank, and any invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank, shall contain the~~

~~viscosity grade classification preceded by the letters “SAE” in accordance with SAE International’s latest version of SAE J300, “Engine Oil Viscosity Classification.”~~

~~NOTE: If an invoice or receipt from service on an engine has limited room for identifying the viscosity, brand, and service category, then abbreviated versions of each may be used on the invoice or receipt and the letters “SAE” may be omitted from the viscosity classification.~~

~~(Note added 2014)~~

~~(Amended 2014)~~

~~2.33.1.2. Brand.— The label on any vehicle engine (motor) oil container and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the name, brand, trademark, or trade name of the vehicle engine (motor) oil.~~

~~(Amended 2014)~~

~~2.33.1.3. Engine Service Category.— The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the engine service category, or categories, displayed in letters not less than 3.18 mm (¹/₈ in) in height, as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”),” API Publication 1509, “Engine Oil Licensing and Certification System,” European Automobile Manufacturers Association (ACEA), “European Oil Sequences,” or other Vehicle or Engine Manufacturer standards as approved in Section 2.33.1.3.1. Vehicle or Engine Manufacturer Standard.~~

~~(Amended 2014)~~

~~2.33.1.3.1. Vehicle or Engine Manufacturer Standard.— The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall identify the specific vehicle or engine manufacturer standard, or standards, met in letters not less than 3.18 mm (¹/₈ in) in height. If the vehicle (motor) oil only meets a vehicle or engine manufacturer standard, the label must clearly identify that the oil is only intended for use where specifically recommended by the vehicle or engine manufacturer.~~

~~(Added 2014)~~

~~2.33.1.3.2. Inactive or Obsolete Service Categories.— The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with the latest version of SAE J183, Appendix A, whenever the vehicle engine (motor) oil in the container or in bulk does not meet an active API service category as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”).” If a vehicle engine (motor) oil is identified as only meeting a vehicle or engine manufacturer standard, the labeling requirements in Section 2.33.1.3.1. Vehicle or Engine Manufacturer Standard applies.~~

~~(Amended 2014)~~

~~2.33.1.4. Tank Trucks or Rail Cars.— Tank trucks, rail cars, and other types of delivery trucks that are used to deliver bulk vehicle engine (motor) oil are not required to display the SAE viscosity grade and service category or categories on such tank trucks, rail cars, and other types of delivery trucks.~~

~~(Amended 2013 and 2014)~~

~~2.33.1.5. Documentation.— When the engine (motor) oil is sold in bulk, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery. This document must identify~~

~~the quantity of bulk engine (motor) oil delivered as defined in Sections 2.33.1.1. Viscosity; 2.33.1.2. Brand; 2.33.1.3. Engine Service Category; the name and address of the seller and buyer; and the date and time of the sale. For inactive or obsolete service categories, the documentation shall also bear a plainly visible cautionary statement as required in Section 2.33.1.3.2. Inactive or Obsolete Service Categories. Documentation must be retained at the retail establishment for a period of not less than one year.~~

~~(Added 2013) (Amended 2014)~~

~~(Added 2012) (Amended 2013 and 2014)~~

2.34. Retail Sales of Electricity Sold as a Vehicle Fuel.

2.34.1. Definitions.

~~2.34.1.1. Electricity Sold as Vehicle Fuel.—Electrical energy transferred to and/or stored onboard an electric vehicle primarily for the purpose of propulsion.~~

~~2.34.1.2. Electric Vehicle Supply Equipment (EVSE).—The conductors, including the ungrounded, grounded, and equipment grounding conductors; the electric vehicle connectors; attachment plugs; and all other fittings, devices, power outlets, or apparatuses installed specifically for the purpose of measuring, delivering, and computing the price of electrical energy delivered to the electric vehicle.~~

~~2.34.1.3. Fixed Service.—Service that continuously provides the nominal power that is possible with the equipment as it is installed.~~

~~2.34.1.4. Variable Service.—Service that may be controlled resulting in periods of reduced, and/or interrupted transfer of electrical energy.~~

~~2.34.1.5. Nominal Power.—Refers to the “intended” or “named” or “stated” as opposed to “actual” rate of transfer of electrical energy (i.e., power).~~

~~2.34.2. Method of Sale.—All electrical energy kept, offered, or exposed for sale and sold at retail as a vehicle fuel shall be in units in terms of the megajoule (MJ) or kilowatt-hour (kWh). In addition to the fee assessed for the quantity of electrical energy sold, fees may be assessed for other services; such fees may be based on time measurement and/or a fixed fee.~~

2.34.3. Retail Electric Vehicle Supply Equipment (EVSE) Labeling.

~~(a) A computing EVSE shall display the unit price in whole cents (e.g., \$0.12) or tenths of one cent (e.g., \$0.119) on the basis of price per megajoule (MJ) or kilowatt-hour (kWh). In cases where the electrical energy is unlimited or free of charge, this fact shall be clearly indicated in place of the unit price.~~

~~(b) For fixed service applications, the following information shall be conspicuously displayed or posted on the face of the device:~~

~~(1) the level of EV service expressed as the nominal power transfer (i.e., nominal rate of electrical energy transfer); and~~

~~(2) the type of electrical energy transfer (e.g., AC, DC, wireless).~~

~~(c) For variable service applications, the following information shall be conspicuously displayed or posted on the face of the device:~~

~~(1) the type of delivery (i.e., variable);~~

- ~~(2) the minimum and maximum power transfer that can occur during a transaction, including whether service can be reduced to zero;~~
- ~~(3) the condition under which variations in electrical energy transfer will occur; and~~
- ~~(4) the type of electrical energy transfer (e.g., AC, DC, wireless).~~
- ~~(d) Where fees will be assessed for other services in direct connection with the fueling of the vehicle, such as fees based on time measurement and/or a fixed fee, the additional fees shall be displayed.~~
- ~~(e) The EVSE shall be labeled in accordance with 16 CFR 309 – FTC Labeling Requirements for Alternative Fuels and Alternative Fueled Vehicles.~~
- ~~(f) The EVSE shall be listed and labeled in accordance with the National Electric Code® (NEC) NFPA 70, Article 625 Electric Vehicle Charging Systems (www.nfpa.org).~~

~~2.34.4. Street Sign Prices and Other Advertisements.~~—Where electrical energy unit price information is presented on street signs or in advertising other than on EVSE:

- ~~(a) The electrical energy unit price shall be in terms of price per megajoule (MJ) or kilowatt hour (kWh) in whole cents (e.g., \$0.12) or tenths of one cent (e.g., \$0.119). In cases where the electrical energy is unlimited or free of charge, this fact shall be clearly indicated in place of the unit price.~~
- ~~(b) In cases where more than one electrical energy unit price may apply over the duration of a single transaction to sales to the general public, the terms and conditions that will determine each unit price and when each unit price will apply shall be clearly displayed.~~
- ~~(c) For fixed service applications, the following information shall be conspicuously displayed or posted:~~
 - ~~(1) the level of EV service expressed as the nominal power transfer (i.e., nominal rate of electrical energy transfer), and~~
 - ~~(2) the type of electrical energy transfer (e.g., AC, DC, wireless).~~
- ~~(d) For variable service applications, the following information shall be conspicuously displayed or posted:~~
 - ~~(1) the type of delivery (i.e., variable);~~
 - ~~(2) the minimum and maximum power transfer that can occur during a transaction, including whether service can be reduced to zero;~~
 - ~~(3) the conditions under which variations in electrical energy transfer will occur; and~~
 - ~~(4) the type of electrical energy transfer (e.g., AC, DC, wireless).~~

~~Where fees will be assessed for other services in direct connection with the fueling of the vehicle, such as fees based on time measurement and/or a fixed fee, the additional fees shall be included on all street signs or other advertising.~~

~~(Added 2013)~~

~~2.35. Diesel Exhaust Fluid (DEF).~~

~~2.35.1. Definition.~~

~~2.35.1.1. Diesel Exhaust Fluid (DEF).—A preparation of aqueous urea [(NH₂)₂CO], containing 32.5 % by mass of technically pure urea in high-purity water with quality characteristics defined by the latest version of ISO 22241, “Diesel engines—NO_x reduction agent AUS 32.”~~

~~2.35.2. Labeling of Diesel Exhaust Fluid (DEF).—DEF shall be labeled.~~

~~2.35.2.1. Retail Dispenser Labeling.—A label shall be clearly and conspicuously placed on the front panel of the Diesel Exhaust Fluid dispenser stating “for operation of selective catalytic reduction (SCR) converters in motor vehicles with diesel engines.”~~

~~2.35.2.2. Documentation for Retailers of Bulk Product.—A DEF supplier shall provide, at the time of delivery of the bulk shipment of DEF, identification of the fluid’s origin including the name of the fluid manufacturer, the brand name, trade name, or trademark, and a statement identifying the fluid as DEF conforming to specifications given in the latest version of ISO 22241, “Diesel engines—NO_x reduction agent AUS 32.” This information shall be provided by the supplier on an invoice, bill of lading, shipping paper, or other document.~~

~~2.35.2.3. Labeling of Packaged Product.—Any diesel exhaust fluid retail package shall bear a label that includes the name of the fluid manufacturer, the brand name, trade name, or trademark, a statement identifying the fluid as DEF conforming to specifications given in the latest version of ISO 22241 “Diesel engines—NO_x reduction agent AUS 32,” and the statement, “It is recommended to store DEF between 5 °C to 30 °C (23 °F to 86 °F).”~~

~~2.35.2.4. Documentation for Bulk Deliveries.—A carrier that transports or accepts for transportation any bulk shipment by tank truck, freight container, cargo tank, railcar, or any other vehicle used to transport or deliver bulk quantities of DEF shall, at the time of delivery of the DEF, provide identification of the fluid’s origin including the name of the fluid manufacturer, the brand name, trade name, or trademark, and a statement identifying the fluid as DEF conforming to specifications given in the latest version of ISO 22241, “Diesel engines—NO_x reduction agent AUS 32.” This information shall be provided to the recipient on an invoice, bill of lading, shipping paper, or other document.~~

Effective date shall be January 1, 2016.

(Added 2014)

~~2.36. Transmission Fluid.~~

~~2.36.1. Products for Use in Lubricating Transmissions.—Transmission fluids shall meet the original equipment manufacturer’s requirements for those transmissions or have demonstrated performance claims to be suitable for use in those transmissions. Where a fluid can be licensed against an original equipment manufacturer’s specification, evidence of current licensing by the marketer is acceptable documentation of performance against the specification. In the absence of a license from the original equipment manufacturer, adherence to the original equipment manufacturer’s recommended requirements shall be assessed after testing per relevant methods available to the lubricants industry and the state regulatory agency. Suitability for use claims shall be based upon appropriate field, bench, and/or transmission rig testing. Any manufacturer of a transmission fluid making suitable for use claims shall provide, upon request by a duly authorized representative of the Director, credible documentation of such claims. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims may be requested in confidence by a duly authorized representative of the Director. Supporting data may be supplied directly to the Director’s office by the additive supplier(s).~~

(Added 2017)

~~2.36.1.1. Conformance.— Conformance of a fluid per Section 2.36.1. Products for Use in Lubricating Transmissions does not absolve the obligations of a fluid licensee with respect to the licensing original equipment manufacturer or the original equipment manufacturer’s licensing agent(s), where relevant.~~
(Added 2017)

~~2.36.1.2. Transmission Fluid Additives.— Any material offered for sale or sold as an additive to transmission fluids shall be compatible with the transmission fluid to which it is added, and shall meet all performance claims as stated on the label or published on any website referenced by the label. Any manufacturer of any such product sold in this state shall provide, upon request by a duly authorized representative of the Director, documentation of any claims made on their product label or published on any website referenced by the label.~~
(Added 2017)

~~2.36.2. Labeling and Identification of Transmission Fluid.— Transmission fluid shall be labeled or identified as described below.~~
(Added 2017)

~~2.36.2.1. Container Labeling.— The label on a container of transmission fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of transmission fluid shall be labeled with the following:~~

- ~~(a) the brand name;~~
 - ~~(b) the name and place of business of the manufacturer, packer, seller, or distributor;~~
 - ~~(c) the words “Transmission Fluid,” which may be incorporated into a more specific description of transmission type such as “Automatic Transmission Fluid” or “Continuously Variable Transmission Fluid”;~~
 - ~~(d) the primary performance claim or claims met by the fluid and reference to where any supplemental claims may be viewed (for example, website reference). Performance claims include but are not limited to those set by original equipment manufacturers and standards setting organizations such as SAE and JASO and are acknowledged by reference; and~~
 - ~~(e) an accurate statement of the quantity of the contents in terms of liquid measure.~~
- (Added 2017)

~~2.36.2.2. Identification on Documentation.— Transmission fluid sold in bulk shall be identified on the manufacturer, packer, seller, or distributor invoice, bill of lading, shipping paper, or other documentation with the information listed below:~~

- ~~(a) the brand name;~~
- ~~(b) the name and place of business of the manufacturer, packer, seller, or distributor;~~
- ~~(c) the words “Transmission Fluid,” which may be incorporated into a more specific description of transmission type such as “Automatic Transmission Fluid” or “Continuously Variable Transmission Fluid”;~~
- ~~(d) the primary performance claim or claims met by the fluid or reference to where these claims may be viewed (for example, website reference). Performance claims include but are not~~

~~limited to those set by original equipment manufacturers and standards setting organizations such as SAE and JASO and are acknowledged by reference; and~~

~~(e) an accurate statement of the quantity of the contents in terms of liquid measure.~~

~~(Added 2017)~~

~~2.36.2.3. Identification on Service Provider Documentation. — Transmission fluid installed from a bulk tank at time of transmission service shall be identified on the customer invoice with the information listed below:~~

~~(a) the brand name;~~

~~(b) the name and place of business of the service provider;~~

~~(c) the words “Transmission Fluid,” which may be incorporated into a more specific description of transmission type such as “Automatic Transmission Fluid” or “Continuously Variable Transmission Fluid”;~~

~~(d) the primary performance claim or claims met by the fluid or reference to where these claims may be viewed (for example, website reference). Performance claims include but are not limited to those set by original equipment manufacturers and standards setting organizations such as SAE and JASO and are acknowledged by reference; and~~

~~(e) an accurate statement of the quantity of the contents in terms of liquid measure.~~

~~(Added 2017)~~

~~2.36.2.4. Bulk Delivery. — When the transmission fluid is sold in bulk, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery. This document must identify the fluid as defined in Section 2.36.2.2. Identification on Documentation.~~

~~(Added 2017)~~

~~2.36.2.5. Storage Tank Labeling. — Each storage tank of transmission fluid shall be labeled with the following:~~

~~(a) the brand name;~~

~~(b) the primary performance claim or claims met by the fluid or reference to where these claims may be viewed (for example, website reference). Performance claims include but are not limited to those set by original equipment manufacturers and standards setting organizations such as SAE and JASO and are acknowledged by reference.~~

~~(Added 2017)~~

~~2.36.3. Documentation of Claims Made Upon Product Label. — Any manufacturer, packer, or distributor of any product subject to this article and sold in this state shall provide, upon request of duly authorized representatives of the Director, credible documentation of any claim made upon their product label, including claims made on any website referenced by said label. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims may be requested in confidence by a duly authorized representative of the Director. Supporting data may be supplied directly to the Director’s office by the additive supplier(s).~~

~~(Added 2017)~~

~~(Added 2017)~~

2.39. Tractor Hydraulic Fluid.

2.39.1. Products for Use in Lubricating Tractors. ~~Tractor hydraulic fluids shall meet at least one current and/or verifiable original equipment manufacturer's specifications for respective tractors. A specification is deemed verifiable if all necessary bench and laboratory tests are available to verify the fluid's ability to pass those requirements set out by the original equipment manufacturer. A list of current and verifiable specifications is located on the NCWM website (www.newm.com). Where a fluid can be licensed against an original equipment manufacturer's specification, evidence of current licensing by the marketer is acceptable documentation of performance against the specification. In the absence of a license from the original equipment manufacturer, adherence to the original equipment manufacturer's specifications shall be assessed after testing per relevant methods available to the lubricants industry and the regulatory agency. Suitability for use claims shall be based upon appropriate field, bench, and/or rig testing. Any manufacturer of a tractor hydraulic fluid making suitable for use claims shall provide, upon request by a duly authorized representative of the Director, credible documentation of such claims. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims shall be provided upon request to a duly authorized representative of the Director. Supporting data shall, upon request, be supplied directly to the Director's office by the additive supplier(s).~~

2.39.1.1. Conformance. ~~Conformance of a fluid per Section 2.39.1. Products for Use in Lubricating Tractors does not absolve the obligations of a fluid licensee with respect to the licensing original equipment manufacturer or the original equipment manufacturer's licensing agent(s), where relevant.~~

2.39.1.2. Tractor Hydraulic Fluid Additives. ~~Any material offered for sale or sold as an additive to tractor hydraulic fluids shall be compatible with the tractor hydraulic fluid to which it is added and shall meet all performance claims as stated on the label or published on any website referenced by the label. Any manufacturer of any such product sold shall provide, upon request by a duly authorized representative of the Director, documentation of any claims made on their product label or published on any website referenced by the label.~~

2.39.2. Labeling and Identification of Tractor Hydraulic Fluid. ~~Tractor hydraulic fluids shall be labeled or identified as described below.~~

2.39.2.1. Container Labeling. ~~The label on a container of tractor hydraulic fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of tractor hydraulic fluid shall be labeled with the following:~~

- ~~(a) the brand name;~~
- ~~(b) the name and place of business of the manufacturer, packer, seller, or distributor;~~
- ~~(c) the words "Tractor Hydraulic Fluid," which may include words such as "Hydraulic Fluid for Agricultural Applications" or "Universal Tractor Transmission Oil";~~
- ~~(d) the primary claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims are those set by original equipment manufacturers;~~
- ~~(e) any obsolete equipment manufacturer specifications should be clearly identified as "obsolete" and accompanied by the following warning on the front package label in clearly legible font size and color:~~

~~**Caution:** Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using this product in applications in which it is not intended.~~

~~The above warning is not required if the fluid claims to meet current original equipment manufacturer's specifications and refers to thereby preceding specifications.~~

- ~~(f) an accurate statement of the quantity of the contents in terms of liquid measure.~~

~~**2.39.2.2. Identification on Documentation.** Tractor hydraulic fluid sold in bulk shall be identified on the manufacturer, packer, seller, or distributor invoice, bill of lading, shipping paper, or other documentation with the information listed below:~~

- ~~(a) the brand name;~~
- ~~(b) the name and place of business of the manufacturer, packer, seller, or distributor;~~
- ~~(c) the words "Tractor Hydraulic Fluid," which may include words such as "Hydraulic Fluid for Agricultural Applications" or "Universal Tractor Transmission Oil";~~
- ~~(d) the primary claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims are those set by original equipment manufacturers;~~
- ~~(e) any obsolete equipment manufacturer specifications should be clearly identified as "obsolete" and accompanied by the following warning on the front package label in clearly legible font size and color:~~

~~**Caution:** Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it is not intended.~~

~~The above warning is not required if the fluid claims to meet current original equipment manufacturer's specifications and refers to thereby preceding specifications.~~

- ~~(f) an accurate statement of the quantity of the contents in terms of liquid measure.~~

~~**2.39.2.3. Identification on Service Provider Documentation.** Tractor hydraulic fluid installed from a bulk tank at time of service shall be identified on the customer invoice with the information listed below:~~

- ~~(a) the brand name;~~
- ~~(b) the name and place of business of the service provider;~~
- ~~(c) the words "Tractor Hydraulic Fluid," which may include words such as "Hydraulic Fluid for Agricultural Applications" or "Universal Tractor Transmission Oil";~~
- ~~(d) the primary claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims are those set by original equipment manufacturers;~~
- ~~(e) any obsolete equipment manufacturer specifications should be clearly identified as "obsolete" and accompanied by the following warning on the front package label in clearly legible font size and color:~~

~~Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it is not intended.~~

~~The above warning is not required if the fluid claims to meet current original equipment manufacturer's specifications and refers to thereby preceding specifications.~~

~~(f) an accurate statement of the quantity of the contents in terms of liquid measure.~~

~~2.39.2.4. Bulk Delivery. When the tractor hydraulic fluid is sold in bulk, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery. This document must identify the fluid as defined in Section 2.39.2.2. Identification on Documentation.~~

~~2.39.2.5. Storage Tank Labeling. Each storage tank of tractor hydraulic fluid shall be labeled with the following:~~

~~(a) the brand name;~~

~~(b) the primary performance claim or claims met by the fluid or reference to where these claims may be viewed (for example, website reference). Performance claims are those set by original equipment manufacturers~~

~~2.39.3. Documentation of Claims Made Upon Product Label. Any manufacturer, packer, or distributor of any product subject to this article and sold shall provide, upon request of duly authorized representatives of the Director, credible documentation of any claim made upon their product label, including claims made on any website referenced by said label. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims shall be provided upon request to a duly authorized representative of the Director. Supporting data shall, upon request, be supplied directly to the Director's office by the additive supplier(s).~~

(Added 2019)

[Remaining products will be renumbered editorially as needed]

2.XX. Fuels, Lubricants, and Automotive Products

2.XX.1. General Information

2.XX.1.1. Definitions. – For additional information on definitions refer to NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation, Section 1. Definitions

2.XX.1.2. Specifications. – For additional information on specifications refer to NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation, Section 2. Standard Specifications.

2.XX.1.3. Identification, Classification, and Labeling. – For additional information on Identification, Classification and Labeling refer to NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation, Section 3. Classification, Identification, and Labeling for Sale.

2.XX.2. Kerosene (Kerosine). – All kerosene kept, offered, exposed for sale, or sold shall be identified as such and will include, with the word kerosene, an indication of its compliance with the latest version of the standard specification ASTM Standard D3699, "Standard Specification for Kerosine."

Example:

1K Kerosene; Kerosene - 2K.

(Added 1983)

2.XX.2.1. Retail Sale from Bulk. – All kerosene kept, offered, or exposed for sale and sold from bulk at retail shall be in terms of the gallon or liter.

(Added 2012)

2.XX.3. Gasoline-Oxygenate Blends.

2.XX.3.1. Labeling for Retail Sale. – Type of Oxygenate must be Disclosed. – All automotive gasoline or automotive gasoline-oxygenate blends kept, offered, or exposed for sale, or sold at retail containing at least 1.5 mass percent oxygen shall be identified as “with” or “containing” (or similar wording) the predominant oxygenate in the engine fuel. For example, the label may read “contains ethanol” or “with MTBE.” The oxygenate contributing the largest mass percent oxygen to the blend shall be considered the predominant oxygenate. Where mixtures of only ethers are present, the retailer may post the predominant oxygenate followed by the phrase “or other ethers” or alternatively post the phrase “contains MTBE or other ethers.” In addition, gasoline-methanol blend fuels containing more than 0.15 mass percent oxygen from methanol shall be identified as “with” or “containing” methanol. This information shall be posted on the upper 50 % of the dispenser front panel in a position clear and conspicuous from the driver’s position in a type at least 12.7 mm ($\frac{1}{2}$ in) in height, 1.5 mm ($\frac{1}{16}$ in) stroke (width of type).

(Amended 1996)

2.XX.3.2. Documentation for Dispenser Labeling Purposes. – The retailer shall be provided, at the time of delivery of the fuel, on product transfer documents such as an invoice, bill of lading, shipping paper, or other documentation:

(a) Information that complies with 40 CFR 80.1503 when the fuel contains ethanol.

(b) For fuels that do not contain ethanol, information that complies with 40 CFR 80.1503 and a declaration of the predominant oxygenate or combination of oxygenates present in concentrations sufficient to yield an oxygen content of at least 1.5 mass percent in the fuel. Where mixtures of only ethers are present, the fuel supplier may identify either the predominant oxygenate in the fuel (i.e., the oxygenate contributing the largest mass percent oxygen) or alternatively, use the phrase “contains MTBE or other ethers.”

(c) Gasoline containing more than 0.15 mass percent oxygen from methanol shall be identified as “with” or “containing” methanol.

(Added 1984) (Amended 1985, 1986, 1991, 1996, and 2014)

2.XX.3.3. EPA Labeling Requirements. – Retailers and wholesale purchaser-consumers of gasoline shall comply with the EPA pump labeling requirements for gasoline containing greater than 10 volume percent (v%) up to 15 volume percent (v%) ethanol (E15) under 40 CFR 80.1501. (For additional information, refer to Section 2.XX.6.2. FTC Labeling Requirements.)

(Added 2018)

2.XX.3.4. Gasoline-Oxygenate Blends – Shall be sold in accordance with the Method of Sale Law. (see NIST Handbook 130, Uniform Weights and Measures Law, Section 17. Method of Sale.)

(Added 20XX)

2.XX.4. Liquefied Petroleum Gas. – All liquefied petroleum gas, including, but not limited to propane, butane, and mixtures thereof, shall be kept, offered, exposed for sale, or sold by the pound, metered cubic foot ^[NOTE 7, page XXX] of vapor (defined as 1 ft³ at 60 °F [15.6 °C]), or the gallon (defined as 231 in³ at 60 °F [15.6 °C]). All metered sales by the gallon, except those using meters with a maximum rated capacity of 20 gal/min or less, shall be accomplished by use of a meter and device that automatically compensates for temperature.

(Added 1986)

NOTE 7: Sources: American National Standards Institute, Inc., “American National Standard for Gas Displacement Meters (500 Cubic Feet per Hour Capacity and Under),” First edition, 1974, and NIST Handbook 44, “Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices.”

2.XX.5. Retail Sales of Natural Gas Sold as a Vehicle Fuel.

2.XX.5.1. Definitions.

2.XX.5.1.1. Compressed Natural Gas (CNG). – A gaseous fuel composed primarily of methane that is suitable for compression and dispensing into a fuel storage container(s) for use as an engine fuel.

(Amended 2016)

2.XX.5.1.2. Gasoline Gallon Equivalent (GGE). – Gasoline gallon equivalent (GGE) means 2.567 kg (5.660 lb) of compressed natural gas.

(Amended 2016)

2.XX.5.1.3. Diesel Gallon Equivalent (DGE). – Diesel gallon equivalent means 6.384 lb of compressed natural gas or 6.059 lb of liquefied natural gas.

(Added 2016)

2.XX.5.1.4. Liquefied Natural Gas (LNG). – Natural gas, which is predominantly methane, that has been liquefied at – 162 °C (– 260 °F) at 14.696 psia and stored in insulated cryogenic fuel storage tanks for use as an engine fuel.

(Added 2016)

2.XX.5.2. Method of Retail Sale and Dispenser Labeling.

2.XX.5.2.1. Method of Retail Sale for Compressed Natural Gas. – All compressed natural gas kept, offered, or exposed for sale and sold at retail as a vehicle fuel shall be measured in terms of mass, and indicated in the gasoline gallon equivalent (GGE), diesel gallon equivalent (DGE) units, or mass.

(Amended 2016)

2.XX.5.2.2. Dispenser Labeling Compressed Natural Gas. – All retail compressed natural gas dispensers shall be labeled with the equivalent conversion factor in terms of pounds (lb). The label shall be permanently and conspicuously displayed on the face of the dispenser and shall have the statement “1 Gasoline Gallon Equivalent (GGE) means 5.660 lb of Compressed Natural Gas” or “1 Diesel Gallon Equivalent (DGE) means 6.384 lb of Compressed Natural Gas” consistent with the method of sale used.

(Amended 2016)

2.XX.5.2.3. Method of Retail Sale for Liquefied Natural Gas. – All liquefied natural gas kept, offered, or exposed for sale and sold at retail as a vehicle fuel shall be measured in mass and indicated in diesel gallon equivalent (DGE) units or mass.

(Added 2016)

2.XX.5.2.4. Dispenser Labeling of Retail Liquefied Natural Gas. – All retail liquefied natural gas dispensers shall be labeled with the equivalent conversion factor in terms of pounds (lb). The label shall be permanently and conspicuously displayed on the face of the dispenser and shall have the statement “1 Diesel Gallon Equivalent (DGE) means 6.059 lb of Liquefied Natural Gas.”

(Added 2016)

2.XX.6. Ethanol Flex Fuel.

2.XX.6.1. How to Identify Ethanol Flex Fuel. – Ethanol flex fuel shall be identified as “Ethanol Flex Fuel or EXX Flex Fuel.”

2.XX.6.2. FTC Labeling Requirements. – Ethanol flex fuel shall be identified and labeled in accordance with the Federal Trade Commission (FTC) Automotive Fuel Ratings, Certification and Posting Rule, 16 CFR 306, as amended. (For additional information, refer to Section 2.XX.3.3. EPA Labeling Requirements.)

(Added 2007) (Amended 2014 and 2018)

2.XX.6.3. Ethanol Flex Fuel – Shall be sold in accordance with the Method of Sale Law. (see NIST Handbook 130, Uniform Weights and Measures Law, Section 17. Method of Sale.)

(Added 20XX)

2.XX.7. Biodiesel and Biodiesel Blends.

2.XX.7.1. Identification of Product. – Biodiesel shall be identified by the term “Biodiesel” with the designation “B100.” Biodiesel Blends shall be identified by the term “Biodiesel Blend.”

2.XX.7.2. Labeling of Retail Dispensers.

2.XX.7.2.1. Labeling of Grade Required. – Biodiesel shall be identified by the grades S15 or S500. Biodiesel blends shall be identified by the grades No. 1-D, No. 2-D, or No. 4-D.

2.XX.7.2.2. EPA Labeling Requirements Also Apply. – Retailers and wholesale purchaser-consumers of biodiesel blends shall comply with EPA pump labeling requirements for sulfur under 40 CFR 80.570.

2.XX.7.2.3. Automotive Fuel Rating. – Biodiesel and biodiesel blends shall be labeled with its automotive fuel rating in accordance with 16 CFR 306.

2.XX.7.2.4. Biodiesel Blends. – When biodiesel blends greater than 20 % by volume are offered by sale, each side of the dispenser where fuel can be delivered shall have a label conspicuously placed that states “Consult Vehicle Manufacturer Fuel Recommendations.” The lettering of this legend shall not be less than 6 mm ($\frac{1}{4}$ in) in height by 0.8 mm ($\frac{1}{32}$ in) stroke; block style letters and the color shall be in definite contrast to the background color to which it is applied.

2.XX.7.3. Documentation for Dispenser Labeling Purposes. – The retailer shall be provided, at the time of delivery of the fuel, a declaration of the volume percent biodiesel on an invoice, bill of lading, shipping paper or other document. This documentation is for dispenser labeling purposes only; it is the responsibility of any potential blender to determine the amount of biodiesel in the diesel fuel prior to blending.

2.XX.7.4. Exemption. – Biodiesel blends that contain less than or equal to 5 % biodiesel by volume are exempt from the requirements of Sections 2.XX.7.1. Identification of Product, 2.XX.7.2. Labeling of Retail Dispensers, and 2.XX.7.3. Documentation for Dispenser Labeling Purposes when it is sold as diesel fuel.

(Added 2008)

2.XX.7.5. Biodiesel and Biodiesel Blends - Shall be sold in accordance with the Method of Sale Law. (see NIST Handbook 130, Uniform Weights and Measures Law, Section 17. Method of Sale.)

(Added 20XX)

2.XX.8. Retail Sales of Hydrogen Fuel (H).

2.XX.8.1. Definitions for Hydrogen Fuel. – A fuel composed of molecular hydrogen intended for consumption in a surface vehicle or electricity production device with an internal combustion engine or fuel cell.

(Amended 2012)

2.XX.8.2. Method of Retail Sale and Dispenser Labeling. – All hydrogen fuel kept, offered, or exposed for sale and sold at retail shall be in mass units in terms of the kilogram. The symbol for hydrogen vehicle fuel shall be the capital letter “H” (the word Hydrogen may also be used).

2.XX.8.3. Retail Dispenser Labeling.

(a) A computing dispenser must display the unit price in whole cents on the basis of price per kilogram.

(b) The service pressure(s) of the dispenser must be conspicuously shown on the user interface in bar or the SI unit of pascal (Pa) (e.g., MPa).

(c) The product identity must be shown in a conspicuous location on the dispenser.

(d) National Fire Protection Association (NFPA) labeling requirements also apply.

(e) Hydrogen shall be labeled in accordance with 16 CFR 309 – FTC Labeling Alternative Fuels.

2.XX.8.4. Street Sign Prices and Advertisements.

(a) The unit price must be in terms of price per kilogram in whole cents (e.g., \$3.49 per kg, not \$3.499 per kg).

(b) The sign or advertisement must include the service pressure (expressed in megapascals) at which the dispenser(s) delivers hydrogen fuel (e.g., H35 or H70).

(Added 2010)

2.XX.9. Oil.**2.XX.9.1. Labeling of Vehicle Engine (Motor) Oil. – Vehicle engine (motor) oil shall be labeled.**

2.XX.9.1.1. Viscosity. – The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank, and any invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank, shall contain the viscosity grade classification preceded by the letters “SAE” in accordance with SAE International’s latest version of SAE J300, “Engine Oil Viscosity Classification.”

NOTE: If an invoice or receipt from service on an engine has limited room for identifying the viscosity, brand, and service category, then abbreviated versions of each may be used on the invoice or receipt and the letters “SAE” may be omitted from the viscosity classification.

(Note added 2014)

(Amended 2014)

2.XX.9.1.2. Brand. – The label on any vehicle engine (motor) oil container and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the name, brand, trademark, or trade name of the vehicle engine (motor) oil.

(Amended 2014)

2.XX.9.1.3. Engine Service Category. – The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall contain the engine service category, or categories, displayed in letters not less than 3.18 mm (1/8 in) in height, as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”),” API Publication 1509, “Engine Oil Licensing and Certification System,” European Automobile Manufacturers Association (ACEA), “European Oil Sequences,” or other Vehicle or Engine Manufacturer standards as approved in Section 2.XX.9.1.3.1. Vehicle or Engine Manufacturer Standard.

(Amended 2014)

2.XX.9.1.3.1. Vehicle or Engine Manufacturer Standard. – The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall identify the specific vehicle or engine manufacturer standard, or standards, met in letters not less than 3.18 mm (1/8 in) in height. If the vehicle (motor) oil only meets a vehicle or engine manufacturer standard, the label must clearly identify that the oil is only intended for use where specifically recommended by the vehicle or engine manufacturer.

(Added 2014)

2.XX.9.1.3.2. Inactive or Obsolete Service Categories. – The label on any vehicle engine (motor) oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of bulk vehicle engine (motor) oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with the latest version of SAE J183, Appendix A, whenever the vehicle engine (motor) oil in the container or in bulk does not meet an active API service category as defined by the latest version of SAE J183, “Engine Oil Performance and Engine Service Classification (Other than “Energy Conserving”).” If a vehicle engine(motor) oil is identified as only meeting a vehicle or engine manufacturer standard, the labeling requirements in Section 2.XX.9.1.3.1. Vehicle or Engine Manufacturer Standard applies.

(Amended 2014)

2.XX.9.1.4. Tank Trucks or Rail Cars. – Tank trucks, rail cars, and other types of delivery trucks that are used to deliver bulk vehicle engine (motor) oil are not required to display the SAE viscosity grade and service category or categories on such tank trucks, rail cars, and other types of delivery trucks.

(Amended 2013 and 2014)

2.XX.9.1.5. Documentation. – When the engine (motor) oil is sold in bulk, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery. This document must identify the quantity of bulk engine (motor) oil delivered as defined in Sections 2.XX.9.1.1. Viscosity; 2.XX.9.1.2. Brand; 2.XX.9.1.3. Engine Service Category; the name and address of the seller and buyer; and the date and time of the sale. For inactive or obsolete service categories, the documentation shall also bear a plainly visible cautionary statement as required in Section 2.XX.9.1.3.2. Inactive or Obsolete Service Categories. Documentation must be retained at the retail establishment for a period of not less than one year.

(Added 2013) (Amended 2014)

2.XX.9.2. Oil - Shall be sold in accordance with the Method of Sale Law. (see NIST Handbook 130, Uniform Weights and Measures Law, Section 17. Method of Sale.)

(Added 20XX)

(Added 2012) (Amended 2013 and 2014)

2.XX.10. Retail Sales of Electricity Sold as a Vehicle Fuel.

2.XX.10.1. Definitions.

2.XX.10.1.1. Electricity Sold as Vehicle Fuel. – Electrical energy transferred to and/or stored onboard an electric vehicle primarily for the purpose of propulsion.

2.XX.10.1.2. Electric Vehicle Supply Equipment (EVSE). – The conductors, including the ungrounded, grounded, and equipment grounding conductors; the electric vehicle connectors; attachment plugs; and all other fittings, devices, power outlets, or apparatuses installed specifically for the purpose of measuring, delivering, and computing the price of electrical energy delivered to the electric vehicle.

2.XX.10.1.3. Fixed Service. – Service that continuously provides the nominal power that is possible with the equipment as it is installed.

2.XX.10.1.4. Variable Service. – Service that may be controlled resulting in periods of reduced, and/or interrupted transfer of electrical energy.

2.XX.10.1.5. Nominal Power. – Refers to the “intended” or “named” or “stated” as opposed to “actual” rate of transfer of electrical energy (i.e., power).

2.XX.10.2. Method of Sale. – All electrical energy kept, offered, or exposed for sale and sold at retail as a vehicle fuel shall be in units in terms of the megajoule (MJ) or kilowatt-hour (kWh). In addition to the fee assessed for the quantity of electrical energy sold, fees may be assessed for other services; such fees may be based on time measurement and/or a fixed fee.

2.XX.10.3. Retail Electric Vehicle Supply Equipment (EVSE) Labeling.

(a) A computing EVSE shall display the unit price in whole cents (e.g., \$0.12) or tenths of one cent (e.g., \$0.119) on the basis of price per megajoule (MJ) or kilowatt-hour (kWh). In cases where the electrical energy is unlimited or free of charge, this fact shall be clearly indicated in place of the unit price.

(b) For fixed service applications, the following information shall be conspicuously displayed or posted on the face of the device:

(1) the level of EV service expressed as the nominal power transfer (i.e., nominal rate of electrical energy transfer), and

(2) the type of electrical energy transfer (e.g., AC, DC, wireless).

(c) For variable service applications, the following information shall be conspicuously displayed or posted on the face of the device:

(1) the type of delivery (i.e., variable);

(2) the minimum and maximum power transfer that can occur during a transaction, including whether service can be reduced to zero;

(3) the condition under which variations in electrical energy transfer will occur; and

(4) the type of electrical energy transfer (e.g., AC, DC, wireless).

(d) Where fees will be assessed for other services in direct connection with the fueling of the vehicle, such as fees based on time measurement and/or a fixed fee, the additional fees shall be displayed.

(e) The EVSE shall be labeled in accordance with 16 CFR 309 – FTC Labeling Requirements for Alternative Fuels and Alternative Fueled Vehicles.

(f) The EVSE shall be listed and labeled in accordance with the National Electric Code® (NEC) NFPA 70, Article 625 Electric Vehicle Charging Systems (www.nfpa.org).

2.XX.10.4. Street Sign Prices and Other Advertisements. – Where electrical energy unit price information is presented on street signs or in advertising other than on EVSE:

(a) The electrical energy unit price shall be in terms of price per megajoule (MJ) or kilowatt-hour (kWh) in whole cents (e.g., \$0.12) or tenths of one cent (e.g., \$0.119). In cases where the electrical energy is unlimited or free of charge, this fact shall be clearly indicated in place of the unit price.

(b) In cases where more than one electrical energy unit price may apply over the duration of a single transaction to sales to the general public, the terms and conditions that will determine each unit price and when each unit price will apply shall be clearly displayed.

(c) For fixed service applications, the following information shall be conspicuously displayed or posted:

(1) the level of EV service expressed as the nominal power transfer (i.e., nominal rate of electrical energy transfer), and

(2) the type of electrical energy transfer (e.g., AC, DC, wireless).

(d) For variable service applications, the following information shall be conspicuously displayed or posted:

(1) the type of delivery (i.e., variable);

(2) the minimum and maximum power transfer that can occur during a transaction, including whether service can be reduced to zero;

(3) the conditions under which variations in electrical energy transfer will occur; and

(4) the type of electrical energy transfer (e.g., AC, DC, wireless).

Where fees will be assessed for other services in direct connection with the fueling of the vehicle, such as fees based on time measurement and/or a fixed fee, the additional fees shall be included on all street signs or other advertising.

(Added 2013)

2.XX.11. Diesel Exhaust Fluid (DEF).

2.XX.11.1. Definition.

2.XX.11.1.1. Diesel Exhaust Fluid (DEF). – A preparation of aqueous urea [(NH₂)₂CO], containing 32.5 % by mass of technically-pure urea in high-purity water with quality characteristics defined by the latest version of ISO 22241, “Diesel engines - NO_x reduction agent AUS 32.”

2.XX.11.2. Labeling of Diesel Exhaust Fluid (DEF). – DEF shall be labeled.

2.XX.11.2.1. Retail Dispenser Labeling. – A label shall be clearly and conspicuously placed on the front panel of the Diesel Exhaust Fluid dispenser stating “for operation of selective catalytic reduction (SCR) converters in motor vehicles with diesel engines.”

2.XX.11.2.2. Documentation for Retailers of Bulk Product. – A DEF supplier shall provide, at the time of delivery of the bulk shipment of DEF, identification of the fluid’s origin including the name of the fluid manufacturer, the brand name, trade name, or trademark, and a statement identifying the fluid as DEF conforming to specifications given in the latest version of ISO 22241, “Diesel engines - NO_x reduction agent AUS 32.” This information shall be provided by the supplier on an invoice, bill of lading, shipping paper, or other document.

2.XX.11.2.3. Labeling of Packaged Product. – Any diesel exhaust fluid retail package shall bear a label that includes the name of the fluid manufacturer, the brand name, trade name, or trademark, a statement identifying the fluid as DEF conforming to specifications given in the latest version of ISO 22241 “Diesel engines - NO_x reduction agent AUS 32,” and the statement, “It is recommended to store DEF between – 5 °C to 30 °C (23 °F to 86 °F).”

2.XX.11.2.4. Documentation for Bulk Deliveries. – A carrier that transports or accepts for transportation any bulk shipment by tank truck, freight container, cargo tank, railcar, or any other vehicle used to transport or deliver bulk quantities of DEF shall, at the time of delivery of the DEF, provide identification of the fluid’s origin including the name of the fluid manufacturer, the brand name, trade name, or trademark, and a statement identifying the fluid as DEF conforming to specifications given in the latest version of ISO 22241, “Diesel engines - NO_x reduction agent AUS 32.” This information shall be provided to the recipient on an invoice, bill of lading, shipping paper, or other document.

Effective date shall be January 1, 2016.

2.XX.11.3. Diesel Exhaust Fluid (DEF) – Shall be sold in accordance with the Method of Sale Law. (see NIST Handbook 130, Uniform Weights and Measures Law, Section 17. Method of Sale.)

(Added 20XX)

(Added 2014)

2.XX.12. Transmission Fluid.

2.XX.12.1. Products for Use in Lubricating Transmissions. – Transmission fluids shall meet the original equipment manufacturer’s requirements for those transmissions or have demonstrated performance claims to be suitable for use in those transmissions. Where a fluid can be licensed against an original equipment manufacturer’s specification, evidence of current licensing by the marketer is

acceptable documentation of performance against the specification. In the absence of a license from the original equipment manufacturer, adherence to the original equipment manufacturer's recommended requirements shall be assessed after testing per relevant methods available to the lubricants industry and the state regulatory agency. Suitability for use claims shall be based upon appropriate field, bench, and/or transmission rig testing. Any manufacturer of a transmission fluid making suitable-for-use claims shall provide, upon request by a duly authorized representative of the Director, credible documentation of such claims. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims may be in confidence by a duly authorized representative of the Director. Supporting data may be supplied directly to the Director's office by the additive supplier(s).

(Added 2017)

2.XX.12.1.1. Conformance. – Conformance of a fluid per Section 2.XX.12.1. Products for Use in Lubricating Transmissions does not absolve the obligations of a fluid licensee with respect to the licensing original equipment manufacturer or the original equipment manufacturer's licensing agent(s), where relevant.

(Added 2017)

2.XX.12.1.2. Transmission Fluid Additives. – Any material offered for sale or sold as an additive to transmission fluids shall be compatible with the transmission fluid to which it is added, and shall meet all performance claims as stated on the label or published on any website referenced by the label. Any manufacturer of any such product sold in this state shall provide, upon request by a duly authorized representative of the Director, documentation of any claims made on their product label or published on any website referenced by the label.

(Added 2017)

2.XX.12.2. Labeling and Identification of Transmission Fluid. – Transmission fluid shall be labeled or identified as described below.

(Added 2017)

2.XX.12.2.1. Container Labeling. – The label on a container of transmission fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of transmission fluid shall be labeled with the following:

(a) the brand name;

(b) the name and place of business of the manufacturer, packer, seller, or distributor;

(c) the words "Transmission Fluid," which may be incorporated into a more specific description of transmission type such as "Automatic Transmission Fluid" or "Continuously Variable Transmission Fluid";

(d) the primary performance claim or claims met by the fluid and reference to where any supplemental claims may be viewed (for example, website reference). Performance claims include but are not limited to those set by original equipment manufacturers and standards setting organizations such as SAE and JASO and are acknowledged by reference; and

(e) an accurate statement of the quantity of the contents in terms of liquid measure.

(Added 2017)

2.XX.12.2.2. Identification on Documentation. – Transmission fluid sold in bulk shall be identified on the manufacturer, packer, seller, or distributor invoice, bill of lading, shipping paper, or other documentation with the information listed below:

- (a) the brand name;**
- (b) the name and place of business of the manufacturer, packer, seller, or distributor;**
- (c) the words “Transmission Fluid,” which may be incorporated into a more specific description of transmission type such as “Automatic Transmission Fluid” or “Continuously Variable Transmission Fluid”;**
- (d) the primary performance claim or claims met by the fluid or reference to where these claims may be viewed (for example, website reference). Performance claims include but are not limited to those set by original equipment manufacturers and standards setting organizations such as SAE and JASO and are acknowledged by reference; and**
- (e) an accurate statement of the quantity of the contents in terms of liquid measure.**
(Added 2017)

2.XX.12.2.3. Identification on Service Provider Documentation. – Transmission fluid installed from a bulk tank at time of transmission service shall be identified on the customer invoice with the information listed below:

- (a) the brand name;**
- (b) the name and place of business of the service provider;**
- (c) the words “Transmission Fluid,” which may be incorporated into a more specific description of transmission type such as “Automatic Transmission Fluid” or “Continuously Variable Transmission Fluid”;**
- (d) the primary performance claim or claims met by the fluid or reference to where these claims may be viewed (for example, website reference). Performance claims include but are not limited to those set by original equipment manufacturers and standards setting organizations such as SAE and JASO and are acknowledged by reference; and**
- (e) an accurate statement of the quantity of the contents in terms of liquid measure.**
(Added 2017)

2.XX.12.2.4. Bulk Delivery. – When the transmission fluid is sold in bulk, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery. This document must identify the fluid as defined in Section 2.XX.12.2.2. Identification on Documentation.

(Added 2017)

2.XX.12.2.5. Storage Tank Labeling. – Each storage tank of transmission fluid shall be labeled with the following:

- (a) the brand name;**

(b) the primary performance claim or claims met by the fluid or reference to where these claims may be viewed (for example, website reference). Performance claims include but are not limited to those set by original equipment manufacturers and standards-setting organizations such as SAE and JASO and are acknowledged by reference.

(Added 2017)

2.XX.12.3. Documentation of Claims Made Upon Product Label. – Any manufacturer, packer, or distributor of any product subject to this article and sold in this state shall provide, upon request of duly authorized representatives of the Director, credible documentation of any claim made upon their product label, including claims made on any website referenced by said label. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims may be requested in confidence by a duly authorized representative of the Director. Supporting data may be supplied directly to the Director's office by the additive supplier(s).

(Added 2017)

2.XX.12.4. Transmission Fluid – Shall be sold in accordance with the Method of Sale Law. (see NIST Handbook 130, Uniform Weights and Measures Law, Section 17. Method of Sale.)

(Added 20XX)

(Added 2017)

2.XX.13. Tractor Hydraulic Fluid.

2.XX.13.1. Products for Use in Lubricating Tractors. – Tractor hydraulic fluids shall meet at least one current and/or verifiable original equipment manufacturer's specifications for respective tractors. A specification is deemed verifiable if all necessary bench and laboratory tests are available to verify the fluid's ability to pass those requirements set out by the original equipment manufacturer. A list of current and verifiable specifications is located on the NCWM website (www.ncwm.com). Where a fluid can be licensed against an original equipment manufacturer's specification, evidence of current licensing by the marketer is acceptable documentation of performance against the specification. In the absence of a license from the original equipment manufacturer, adherence to the original equipment manufacturer's specifications shall be assessed after testing per relevant methods available to the lubricants industry and the regulatory agency. Suitability for use claims shall be based upon appropriate field, bench, and/or rig testing. Any manufacturer of a tractor hydraulic fluid making suitable for use claims shall provide, upon request by a duly authorized representative of the Director, credible documentation of such claims. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims shall be provided upon request to a duly authorized representative of the Director. Supporting data shall, upon request, be supplied directly to the Director's office by the additive supplier(s).

2.XX.13.1.1. Conformance. – Conformance of a fluid per Section 2.XX.13.1. Products for Use in Lubricating Tractors does not absolve the obligations of a fluid licensee with respect to the licensing original equipment manufacturer or the original equipment manufacturer's licensing agent(s), where relevant.

2.XX.13.1.2. Tractor Hydraulic Fluid Additives. – Any material offered for sale or sold as an additive to tractor hydraulic fluids shall be compatible with the tractor hydraulic fluid to which it is added and shall meet all performance claims as stated on the label or published on any website referenced by the label. Any manufacturer of any such product sold shall provide, upon request by a duly authorized representative of the Director, documentation of any claims made on their product label or published on any website referenced by the label.

2.XX.13.2. Labeling and Identification of Tractor Hydraulic Fluid. – Tractor hydraulic fluids shall be labeled or identified as described below.

2.XX.13.2.1. Container Labeling. – The label on a container of tractor hydraulic fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of tractor hydraulic fluid shall be labeled with the following:

- (a) the brand name;
- (b) the name and place of business of the manufacturer, packer, seller, or distributor;
- (c) the words “Tractor Hydraulic Fluid,” which may include words such as “Hydraulic Fluid for Agricultural Applications” or “Universal Tractor Transmission Oil”;
- (d) the primary claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims are those set by original equipment manufacturers;
- (e) any obsolete equipment manufacturer specifications should be clearly identified as “obsolete” and accompanied by the following warning on the front package label in clearly legible font size and color:

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using this product in applications in which it is not intended.

The above warning is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications.

- (f) an accurate statement of the quantity of the contents in terms of liquid measure.

2.XX.13.2.2. Identification on Documentation. – Tractor hydraulic fluid sold in bulk shall be identified on the manufacturer, packer, seller, or distributor invoice, bill of lading, shipping paper, or other documentation with the information listed below:

- (a) the brand name;
- (b) the name and place of business of the manufacturer, packer, seller, or distributor;
- (c) the words “Tractor Hydraulic Fluid,” which may include words such as “Hydraulic Fluid for Agricultural Applications” or “Universal Tractor Transmission Oil”;
- (d) the primary claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims are those set by original equipment manufacturers;
- (e) any obsolete equipment manufacturer specifications should be clearly identified as “obsolete” and accompanied by the following warning on the front package label in clearly legible font size and color:

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it is not intended.

The above warning is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications.

- (f) an accurate statement of the quantity of the contents in terms of liquid measure.

2.XX.13.2.3. Identification on Service Provider Documentation. – Tractor hydraulic fluid installed from a bulk tank at time of service shall be identified on the customer invoice with the information listed below:

- (a) the brand name;
- (b) the name and place of business of the service provider;
- (c) the words “Tractor Hydraulic Fluid,” which may include words such as “Hydraulic Fluid for Agricultural Applications” or “Universal Tractor Transmission Oil”;
- (d) the primary claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims are those set by original equipment manufacturers;
- (e) any obsolete equipment manufacturer specifications should be clearly identified as “obsolete” accompanied by the following warning on the front package label in clearly legible font size and color:

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it is not intended.

The above warning is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications.

- (f) an accurate statement of the quantity of the contents in terms of liquid measure.

2.XX.13.2.4. Bulk Delivery. – When the tractor hydraulic fluid is sold in bulk, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery. This document must identify the fluid as defined in Section 2.XX.13.2.2. Identification on Documentation.

2.XX.13.2.5. Storage Tank Labeling. – Each storage tank of tractor hydraulic fluid shall be labeled with the following:

- (a) the brand name;
- (b) the primary performance claim or claims met by the fluid or reference to where these claims may be viewed (for example, website reference). Performance claims are those set by original equipment manufacturers.

2.XX.13.3. Documentation of Claims Made Upon Product Label. – Any manufacturer, packer, or distributor of any product subject to this article and sold shall provide, upon request of duly authorized representatives of the Director, credible documentation of any claim made upon their product label, including claims made on any website referenced by said label. If the product performance claims published by a blender and/or marketer are based on the claim(s) of one or more additive suppliers, documentation of the claims shall be provided upon request to a duly authorized representative of the Director. Supporting data shall, upon request, be supplied directly to the Director’s office by the additive supplier(s).

(Added 2019)

2.XX.13.4. Tractor Hydraulic Fluid – Shall be sold in accordance with the Method of Sale Law. (see NIST Handbook 130, Uniform Weights and Measures Law, Section 17. Method of Sale.) (Added 20XX)

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the 2019 WWMA Annual Meeting, Mr. Tim Elliott (Washington and submitter) provided a presentation. The current NIST Handbook 130 language does not cause harm to any States and the Committee does not see a need to change the existing handbook language. If the language was adopted as proposed it would have unintended consequences. The Committee is recommending this item be Withdrawn.

At the 2019 SWMA Annual Meeting, the Committee would like to leave the language as it appears in their agenda. They would like to see this as an Assigned item. They are concerned that if this is adopted it may hinder some states from regulation or their authority. Prior to continuing the developing of this item they would like to have the submitter determine what the ramifications are from the states that may be impacted by the adoption of this item.

There was a typographical change that needs to be made (reflected by a double underline) in Section 2.XX.1.2. Specifications

2.XX. Fuels, Lubricants, and Automotive Products

2.XX.1. General Information

2.XX.1.1. Definitions. – For additional information on definitions refer to NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation, Section 1. Definitions

2.XX.1.2. Specifications. – For additional information on specifications refer to NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation, Section 2. Standard Specifications.

At the 2019 NEWMA Interim Meeting, Mr. Jim Willis (New York) commented with his concerns on this item would have unintended negative consequences, and he does not understand what problem is being solved with this proposal. The Committee recommended that this item be Withdrawn.

At the CWMA 2019 Interim Meeting, Mr. Corr (CC Consulting), gave a presentation providing a history and purpose for this item, which is to improve the organization of NIST Handbook 130 to make it more user friendly. Mr. Corr encouraged comments during open hearings so they could be reflected in the regional report. Mr. Charlie Stutesman (Kansas) commented that he believes it is appropriate to have fuel regulation in its own section. Mr. Stutesman suggested incorporating references from one section to another. The Committee believes the item is still being developed and should continue with an Assigned status.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports to review these documents.

ITEM BLOCK 6 (B6) TRANSMISSION FLUID

B6: MOS-21.1 A Section 2.36.2. Labeling and Identification of Transmission Fluid
B6: FLR-21.2 A Section 3.14.1. Labeling and Identification of Transmission Fluid

Source:

Missouri Department of Agriculture

Purpose:

Protect consumers by providing a cautionary statement of package labels of obsolete transmission fluids.

B6: MOS-21.1. A Section 2.36.2. Labeling and Identification of Transmission Fluid

Item Under Consideration:

Amend NIST Handbook 130, Uniform Regulation for the Method of Sale of Commodities, as follows:

2.36.2. Labeling and Identification of Transmission Fluid. – Transmission fluid shall be labeled or identified as described below.

(Added 2017)

2.36.2.1. Container Labeling. – The label on a container of transmission fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of transmission fluid shall be labeled with the following:

- (a) the brand name;
- (b) the name and place of business of the manufacturer, packer, seller, or distributor;
- (c) the words “Transmission Fluid,” which may be incorporated into a more specific description of transmission type such as “Automatic Transmission Fluid” or “Continuously Variable Transmission Fluid”;
- (d) the primary performance claim or claims met by the fluid and reference to where any supplemental claims may be viewed (for example, website reference). Performance claims include but are not limited to those set by original equipment manufacturers and standards setting organizations such as SAE and JASO and are acknowledged by reference; and
- (e) an accurate statement of the quantity of the contents in terms of liquid measure.
- (f) Any obsolete equipment manufacturer specifications shall be clearly identified as “obsolete” and accompanied by the following cautionary statement on the principal display in accordance with the Uniform Packaging and Labeling Regulation, Section 8. Prominence and Placement: Consumer Packages and Section 9. Prominence and Placement: Non-Consumer Packages.

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission is possible when using in applications in which it is not intended. Always refer to your vehicle owner’s manual for proper transmission fluids.

The above ~~warning~~-cautionary statement is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications
(Added 20XX)

(Added 2017 and Amended 20XX)

B6: FLR-21.2. A Section 3.14.1. Labeling and Identification of Transmission Fluid

Item Under Consideration:

Amend NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation, as follows

3.14.1. Labeling and Identification of Transmission Fluid. – Transmission fluid shall be labeled or identified as described below

(Added 2017)

3.14.1.1. Container Labeling. – The label on a container of transmission fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of transmission fluid shall be labeled with the following:

- (a) the brand name;
- (b) the name and place of business of the manufacturer, packer, seller, or distributor;
- (c) the words “Transmission Fluid,” which may be incorporated into a more specific description of transmission type such as “Automatic Transmission Fluid” or “Continuously Variable Transmission Fluid”;
- (d) the primary performance claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims include but are not limited to those set by original equipment manufacturers and standards setting organizations such as SAE and JASO and are acknowledged by reference; and
- (e) an accurate statement of the quantity of the contents in terms of liquid measure.
- (f) Any obsolete equipment manufacturer specifications shall be clearly identified as “obsolete” and accompanied by the following cautionary statement on the principal display panel in accordance with the Uniform Packaging and Labeling Regulation, Section 8. Prominence and Placement: Consumer Packages and Section 9. Prominence and Placement: Non-Consumer Packages.

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission is possible when using in applications in which it is not intended. Always refer to your vehicle owner’s manual for proper transmission fluids.

The above cautionary statement is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications
(Added 20XX)

(Amended 2017 and 20XX)

Previous Action:

- N/A

Original Justification:

Cautionary statements regarding obsolete products are currently required for tractor hydraulic fluids and are under consideration for motor oil. A cautionary statement and its position on the product label are currently not required for Transmission fluid in either the Method of Sale, or Fuels and Lubricants Regulations. This proposal will protect consumers by ensuring they are informed when purchasing transmission fluids.

The submitter acknowledged that there may be argument that there is not sufficient space on the front package label for a cautionary statement.

The submitter requested Voting status for this item in 2021.

Arguments Against:

Industry:

- Ms. Johanna Johnson has been working with industry regarding the terminology. This is important that everyone understands the terminology. Currently industry uses terminology but has different meanings.

Advisory:

- Ms. Warfield (NIST) remarked that the language should be clear and conspicuous following the UPLR. It was unknown whether this product type include both consumer and non-consumer type packaging.

Item Development:

N/A

Background/Discussion:

At the 2021 NCWM Interim Meeting the Committee reviewed the following item for consideration in NCWM Publication 15 (2021):

- (e) Any obsolete equipment manufacturer specifications shall be clearly identified as “obsolete” and accompanied by the following warning on the principle display panel in clearly legible font size and color as stated in Uniform Packaging and Labeling Regulation 8.2.2.:

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the Transmission is possible when using in applications in which it is not intended. Always refer to your vehicle owner’s manual for proper transmission fluids.

The above warning is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications

(Added 20XX)

Mr. Ron Hayes (retired) provided an overview to the Committee regarding the issue with obsolete fluids in the marketplace. He remarked that at the CWMA 2020 Interim Meeting he with worked with Ms. Lisa Warfield (NIST OWM) to clarify the language in the first paragraph of (f). Ms. Warfield had noted that UPLR does not have specifications for color; however, Section 8. does state it must be conspicuous. It was agreed by the Committee that this language should be identical to the Item Block 2 Tractor Hydraulic Fluid language that was just voted in at the 2020 NCWM Annual Meeting. Ms. Johanna Johnson would like additional time to reach consensus with industry regarding to align terminology (e.g., obsolete, current, active). Ms. Johnson requested the Committee provide this with an informational status. FALS Chair Striejewski informed the Committee that Ms. Johnson provided a presentation that provided additional information and it will be posted on the NCWM Website under supporting documents.

The Committee designated a status of Assigned and would like FALS to further evaluate with recommendations that Ms. Johnson provided. In addition, the Committee would like FALS to review the language to see if this product includes consumer and non-consumer type packaging. Many spoke in support of how this item will be developed through FALS.

At the 2021 NCWM Annual Meeting, FALS Chair Striejewske provided an update that Ms. Johnson provided of the FG work to date. The FG has concluded that the model regulation in the handbook is sufficient, but there is no licensing system for transmission fluid as there is for engine oil. Transmission fluids have been found in the marketplace in Missouri that are not suitable for use in some transmissions. The group is working to harmonize the various standards across the industry. A number of OEM specifications have been found and are being categorized. This work is ongoing. During open hearings several industry representatives spoke in support of this Item.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the 2020 WWMA Annual Meeting, the Committee heard concerns from regulators about having an up-to-date reference table to implement and enforce this regulation for transmission fluids. Mr. Hayes indicated he would work with Lubrizol to provide a table. The Committee heard concerns from regulators regarding the necessity of the language proposed in the third paragraph of subsection (f) in proposals MOS-21.1 and FLR 21.2; testimony indicated that this language is not needed and confusing. The Committee also heard concerns from regulators regarding a definition for “obsolete.”

The WWMA L&R Committee recommended this as a Developing item. The Committee recommended the third paragraph in Section 2.36.2.1.(f) be removed from both items, that a reference table be provided prior to the item being forwarded for a vote, and that the submitter include a clear definition of obsolete in the proposal.

- (f) Any obsolete equipment manufacturer specifications shall be clearly identified as “obsolete” and accompanied by the following warning on the principal display panel in clearly legible font size and color as stated in Uniform Packaging and Labeling Regulation 8.2.2.:**

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the Transmission is possible when using in applications in which it is not intended. Always refer to your vehicle owner’s manual for proper transmission fluids.

~~The above warning is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications.~~

At the SWMA 2020 Annual Meeting, Mr. Stephen Benjamin (North Carolina) expressed his support for this Item. The Committee had concerns over the definition of “obsolete” and the need for the third paragraph in Section 2.36.2.1.(f). It was also noted that UPLR 8.2.2. Numbers and Letters: Proportion does not address color. This section was amended by the Committee to read Section 8.1. General.

The SWMA L&R Committee recommended this as an Information item. The Committee also recommended that the submitter provide a clear definition of obsolete, that the first paragraph of Section 2.36.2.1.(f). for both items be updated as suggested below and that the third paragraph of subsection (f) be removed from both items.

- (f) Any obsolete equipment manufacturer specifications shall be clearly identified as “obsolete” and accompanied by the following warning on the principal display panel in accordance with clearly legible font size and color as stated in Uniform Packaging and Labeling Regulation 8.1 General, 8.2.2.:**

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the Transmission is possible when using in applications in which it is not intended. Always refer to your vehicle owner’s manual for proper transmission fluids.

~~The above warning is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications~~

(Added 20XX)

At the 2020 NEWMA Interim Meeting, Mr. Mike Sikula (New York) asked if this language applied to all transmission fluids or only specific types. Mr. Sikula had concerns about getting regulators in a precarious position between the engine manufacturers and the fluid manufacturers. Mr. Sikula believed this is already covered with motor oil in NIST Handbook 130 and does not need further elaboration for transmission fluid. Mr. Sikula is concerned this could become an unmanageable trend for any engine liquids or even beyond. Mr. Ethan Bogren (Westchester County, New York) questioned if there is an existing problem that is being addressed by this proposal. Ms. Warfield commented that this language was modeled after the tractor hydraulic fluid regulation. Mr. Lou Sakin (Town of Hopkinton, Massachusetts)

asked if this could veer into a deceptive practice's situation. Mr. John McGuire (New Jersey) recommended that Section 2.36.2.1.(f). "and color" and the third paragraph under section "f" be stricken. Mr. John Gaccione (Westchester County, New York) commented that he agreed with Mr. Sikula and believes there has never been a clear distinction between regulation and consumer protection. Mr. Gaccione believes there are ambiguous definitions, including the word "obsolete" and this should be further vetted as a Developing item. Mr. Gaccione believed that clarification on the definition of the term obsolete is defined as, when it takes effect, and to explain when it is applicable. Ms. Warfield commented that it is when the engine manufacturer determines it is obsolete. Mr. Sikula was concerned this item could put regulators in an awkward position. Mr. Jeffrey Leiter (ILMA) remarked that ILMA is gathering information on this item to see if there is currently any concern in the marketplace and gathering information from the industry. The Committee recommended this item be moved forward as a Developing item and requested the submitter address the comments made during NEWMA open hearings.

At the 2021 NEWMA Annual Meeting, Ms. Warfield commented that there is a TG within FALS working on this item and expect to have an update by the Fall 2021 Regional meetings. Mr. Walt Remmert (Pennsylvania) questioned the shelf life of transmission fluid. The Committee believed this item should remain as an Assigned item.

At the 2020 CWMA Interim Meeting, Ms. Johnson commented that this should remain a Developing item. There are several facets of this item that require further discussion. engine oil and transmission fluid terminology are not necessarily consistent. Automakers have no history using this type of language for transmission fluid and wants to work with other stakeholders to develop language for consumer protection as the submitter intended. Mr. Aaron Lowe (Auto Care Association) representing auto part chains, agreed with Ms. Johnson and supported the general idea but needs more study. An average age for cars on the road currently is twelve-years and additional study is needed to develop language. Mr. Jeff Harmening (API) concurs with the above-mentioned comments. Mr. Charlie Stutesman (Kansas) commented that this item has merit and should move forward as a developing item. Mr. Hayes commented that this item is intended to give consumer guidance like other equipment fluids. Mr. Hayes intends to continue to work with industry on this item including developing a list of obsolete oils. Mr. Leiter submitted written comments that were reviewed by the Committee. Ms. Warfield asked if the submitter wished for the item to be developed through FALS. Mr. Hayes agrees that the item is developing and should be assigned to FALS for further review. Based on discussions during open hearings and the Committee work session, the Committee recommended the item be Assigned and be referred to FALS.

At the CWMA 2021 Annual Meeting, Mr. Hayes commented that a FALS TG working on developing this item and will report on further advancements in the future. Mr. John Bell (Missouri) commented that this item was submitted to match language in other sections of NIST Handbook 130.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/newm-annual-reports to review these documents.

ITEM BLOCK 7 (B7) TRACTOR HYDRAULIC FLUID

(This Block of items was Adopted.)

B7: MOS-21.2 V Section 2.39.2. Labeling and Identification of Tractor Hydraulic Fluid
B7: FLR-21.3 V Section 3.17.1. Labeling and Identification of Tractor Hydraulic Fluid

Source:

Missouri Department of Agriculture

Purpose:

To ensure that the obsolete labeling is required and not an option.

B7: MOS-21.2. V Section 2.39.2. Labeling and Identification of Tractor Hydraulic Fluid

Item Under Consideration:

Amend NIST Handbook 130, Uniform Regulation for the Method of Sale of Commodities, as follows:

2.39.2. Labeling and Identification of Tractor Hydraulic Fluid. – Tractor hydraulic fluids shall be labeled or identified as described below.

2.39.2.1. Container Labeling. – The label on a container of tractor hydraulic fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of tractor hydraulic fluid shall be labeled with the following:

...

- (e) any obsolete equipment manufacturer specifications ~~should~~shall be clearly identified as “obsolete” and accompanied by the following cautionary statement on the principal display panel in accordance with the Uniform Packaging and Labeling Regulation, Section 8. Prominence and Placement: Consumer Packages and Section 9. Prominence and Placement: Non-Consumer Packages.

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using this product in applications in which it is not intended.

The above cautionary statement is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications; and

(Amended 2021)

...

2.39.2.2. Identification on Documentation. – Tractor hydraulic fluid sold in bulk shall be identified on the manufacturer, packer, seller, or distributor invoice, bill of lading, shipping paper, or other documentation with the information listed below:

...

- (e) any obsolete equipment manufacturer specifications ~~should~~shall be clearly identified as “obsolete” and accompanied by the following cautionary statement on the documentation in a clear and conspicuous manner.

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it is not intended.

The above cautionary statement is not required if the fluid claims to meet current original equipment manufacturer’s specifications and refers to thereby preceding specifications; and

(Amended 2021)

2.39.2.3. Identification on Service Provider Documentation. – Tractor hydraulic fluid installed from a bulk tank at time of service shall be identified on the customer invoice with the information listed below:

...

- (e) any obsolete equipment manufacturer specifications ~~should~~shall be clearly identified as “obsolete” and accompanied by the following cautionary statement on the customer invoice in a clear and conspicuous manner.

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive, or axles is possible when using in applications in which it is not intended.

The above cautionary statement is not required if the fluid claims to meet current original equipment manufacturer's specifications and refers to thereby preceding specifications; and

(Amended 2021)

B7: FLR-21.3. V Section 3.17.1. Labeling and Identification of Tractor Hydraulic Fluid

Item Under Consideration:

Amend NIST Handbook 130, Uniform Fuels and Automotive Lubricants Regulation, as follows

3.17.1. Labeling and Identification of Tractor Hydraulic Fluid. – Tractor hydraulic fluid shall be labeled or identified as described below

3.17.1.1. Container Labeling – The label on a container of tractor hydraulic fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of tractor hydraulic fluid shall be labeled with the following:

...

- (e) any obsolete equipment manufacturer specifications ~~should~~**shall** be clearly identified as “obsolete” and accompanied by the following cautionary statement on the principal display panel in accordance with the Uniform Packaging and Labeling Regulation, Section 8. Prominence and Placement: Consumer Packages and Section 9. Prominence and Placement: Non-Consumer Packages.

Caution: Some specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it was not intended.

The above cautionary statement is not required if the fluid claims to meet current original equipment manufacturer's specifications and refers to thereby preceding specifications; and

(Amended 2021)

...

3.17.1.2. Identification on Documentation. – Tractor hydraulic fluid sold in bulk shall be identified on the manufacturer, packer, seller or distributor invoice, bill of lading, shipping paper, or other documentation with the information listed below:

...

- (e) any obsolete equipment manufacturer standard ~~should~~**shall** be clearly identified as “obsolete” and accompanied by the following cautionary statement on the documentation in a clear and conspicuous manner.

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it is not intended.

The above cautionary statement is not required if the fluid claims to meet current original equipment manufacturer's specifications and refers to thereby preceding specifications. an accurate statement of the quantity of the contents in terms of liquid measure; and

(Amended 2021)

3.17.1.3. Identification on Service Provider Documentation. – Tractor hydraulic fluid installed from a bulk tank at time of service shall be identified on the customer invoice with the information listed below:

...

- (e) any obsolete equipment manufacturer specifications ~~should~~**shall** be clearly identified as "obsolete" and accompanied by the following cautionary statement on the customer invoice in a clear and conspicuous manner.

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission, hydraulic system, seals, final drive or axles is possible when using in applications in which it is not intended.

The above cautionary statement is not required if the fluid claims to meet current original equipment manufacturer's specifications and refers to thereby preceding specifications; and

(Amended 2021)

Previous Action:

- N/A

Original Justification:

This is a proposal to change the permissive term "should" to "shall" in NIST Handbook, Method of Sale Regs. Sections 2.39.2.1.(e), 2.39.2.2.(e), and 2.39.2.3.(e). The following Sections of the Fuels and Lubricants Regs are also being recommended for a change for the term "should" to "shall"; Sections 3.17.1.1.(e), 3.17.1.2.(e), and 3.17.1.3.(e).

The submitter requested voting status for this item in 2021.

Arguments in Favor:

Regulatory:

- Several regulators made comments to the affirmative to change the language from "should to "shall."

Industry:

- Representatives from API and ILMA agreed with the updated terminology of changing the permissive language from "should" to "shall."

Advisory:

- Technical advisors discussed the permissive term and its intent on the item.

Item Development:

N/A

Background/Discussion:

At the 2021 NCWM Interim Meeting, it was noted that the term "should" is permissive, and the word "shall" should replace it. At the 2020 NCWM Annual Meeting language changes for these exact sections had been given a "positive vote." The language from the 2020 NCWM Annual has been incorporated into this Item under Consideration. This item was not incorporated into the 2020 NCWM Annual language because the Committee felt changing a permissive term should have additional vetting and due process. There were no comments in opposition received. The Committee hearing positive comments changed the word "should" to "shall" and recommended this as a Voting item.

At the 2021 NCWM Annual Meeting many rose in support of this item. This item was adopted.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the 2020 WWMA Annual Meeting, the Committee heard testimony from both industry and regulators in support of this item. The WWMA L&R Committee recommended this item move forward as a Voting item. The Committee agreed that the language in the regulation be mandatory rather than permissive.

At the 2020 SWMA Annual Meeting, the L&R Committee recommended this as a Voting item. The SWMA hopes that this will be resolved with carryover item Block 2 on the 2020 L&R NCWM Committee Agenda.

At the 2020 NEWMA Interim Meeting, Ms. Lisa Warfield (NIST OWM) stated that these items may not be necessary if addressed in Voting items in Block 2 Tractor Hydraulic Fluid. These changes can be applied to MOS 20.1 and FLR 20.1. Mr. Jeffrey Leiter (ILMA) supports changing “should” to “shall”. Mr. Mike Sikula (New York) had concerns that manufacturers are dictating the terms putting weights and measures in a position that compromises the equity role of weights and measures officials. Mr. John McGuire (New Jersey) recommended striking the word “color” in Section 2.39.2.1(e), Section 2.39.2.2(e), Section 2.39.2.3(e), and Section 3.17.1.1, as it does not comport with UPLR Section 8.2.2. The Committee recommends this block as Voting items with incorporated changes.

At the 2021 NEWMA Annual Meeting, the Committee agreed this item is fully developed and is ready for a Voting status.

At the 2020 CWMA Interim Meeting, L&R Chair Musick commented that modified language changes for Item Block 2. Tractor Hydraulic Fluid includes these changes from “should” to “shall”. Mr. Ron Hayes (Missouri) stated that this language change is important and wants this item to move forward in case the Block 2 Items for Tractor Hydraulic Fluid are not adopted. Mr. Jeff Harmening (API) supported this item moving forward as a Voting item. Mr. Charlie Stutesman (Kansas) believed these changes are appropriate and supported this item moving forward as a voting item. He further stated that if these changes are included in Block 2. Tractor Hydraulic Fluid, he wants to ensure that this language change be a priority regardless if all of Block 2 passes or not. Ms. Lisa Warfield (NIST) commented that the Block 2 item is on the NCWM Annual Meeting agenda and will be determined prior to this item’s consideration. Mr. Hayes commented that this item should have voting status. Ms. Warfield commented that if Block 2 does not move forward in entirety, some changes in this item could still pass if the NCWM L&R only moved forward the language they felt would be adopted. Based on the discussions held during open hearings and Committee work session, the recommendation for this item is to be a Voting item.

At the 2021 CWMA Annual Meeting, Mr. Kevin Upshulte (Missouri) commented that the word “should” is not an enforceable term, so the change to “shall” is necessary for enforcement and supported this item. The Committee recommended this as a Voting item.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports to review these documents.

NET – HANDBOOK 133

NET-16.1 W Section 3.X. Recognize the Use of Digital Density Meters

(This item was Withdrawn)

Source:
Missouri

Purpose:

Allow the use of digital density meters for package checking testing of viscous fluids such as motor oils, diesel exhaust fluid (DEF), and antifreeze.

Item Under Consideration:

Amend NIST Handbook 133 as follows:

3.X. Volumetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Digital Density Meter

This test method is suitable for measuring the density of dairy products such as milk and half and half, petroleum products such as fuel and paint thinner, fruit drinks such as pulp-free juices, syrups, vegetable oils, as well as other viscous and non-viscous liquids.

This test method is not recommended for high pulp or carbonated products (soda, beer, etc.) and all products tested should be free of suspended gas, air, sediment, or substances not approved by the digital density meter manufacturer.

3.X.1. Test Equipment

- A scale that meets the requirements in Chapter 2, Section 2.2. “Measurement Standards and Test Equipment.”

Note: To verify that the scale has adequate resolution for use, it is first necessary to determine the density of the liquid; next verify that the scale division is no larger than MAV/6 for the package size under test. The smallest graduation on the scale must not exceed the weight value for MAV/6.

Example:

Assume the inspector is using a scale with 1 g (0.002 lb) increments to test packages labeled 1 L (33.8 fl oz) that have an MAV of 29 mL (1 fl oz). Also, assume the inspector finds that the weight of 1 L of the liquid is 943 g (2.078 lb).

Density: 1 L = 943 g (2.078 lb)

MAV: 29 mL (1 fl oz)

Convert Density into mL and fl oz:

$943 \text{ g} \div 1000 \text{ mL} = 0.943 \text{ g/mL}$ $(2.078 \text{ lb} \div 33.8 \text{ fl oz} = 0.0614 \text{ lb/fl oz})$

Convert MAV from Volume (mL/fl oz) to Weight:

$29 \text{ mL} \times 0.943 \text{ g/mL} = 27.347 \text{ g}$ $1 \text{ fl oz} \times 0.0614 \text{ lb/fl oz} = 0.0614 \text{ lb}$

MAV in Weight/6

$27.347 \text{ g} \div 6 = 4.557 \text{ g}$ $0.0614 \div 6 = 0.010 \text{ lb}$

In this example, the 1 g (0.002 lb) scale division is smaller than the MAV/6 value of 4.557 g (0.010 lb) so the scale is suitable for making a density determination.

- Air pump, low pressure– an aquarium air pump (to dry out measuring cell)
- Syringe, glass or plastic with Luer fitting (5mL or larger) - Note: Plastic syringe should be free of any lubricating substances
- Stopwatch (optional)
- Distilled or deionized water
- Cleaning agents (See Table 3.X. Cleaning Agents)
- Waste container
- Barometer, or other device for obtaining the prevailing barometric pressure, with an accuracy of ± 3.0 mmHg – Note: smart phones with a barometer application that uses the phone’s pressure sensor, have a typical accuracy of ± 0.2 mmHg (*comment: barometer may not be necessary*)
- Thermometer for measuring air temperature with a tolerance of $\pm 1^\circ\text{C}$ (2°F)
- Portable digital density meter meeting a minimum requirement of:

<u>Measuring Range</u>	
<u>Density</u>	<u>$0 - 3 \text{ g/cm}^3$</u>
<u>Temperature</u>	<u>$0 - 4^\circ\text{C}$ ($32 - 104^\circ\text{F}$)^a</u>
<u>Viscosity</u>	
<u>Accuracy^b</u>	
<u>Density</u>	<u>0.001 g/cm^3</u>
<u>Temperature</u>	<u>0.2°C (0.4°F)</u>
<u>Repeatability s.d.</u>	
<u>Density</u>	<u>0.0005 g/cm^3</u>
<u>Temperature</u>	<u>0.1°C (0.1°F)</u>
<u>Sample Volume</u>	<u>2 mL</u>
<u>Sample Temperature</u>	<u>max. 200°C (212°F)</u>
<u>footnotes</u>	
^a <u>Filling at higher temperatures possible.</u>	
^b <u>Viscosity < 100 mPa·s, density < g/cm^3</u>	

3.X.2. Test Procedure

1. Follow Section 2.3.1. “Define the Inspection Lot.” Use a “Category A” sampling plan in the inspection. Select a random sample.

2. Bring the sample packages and their contents to ambient temperature $\pm 5^{\circ}\text{C}$ (9°F).

Note: For refrigerated samples such as milk and other dairy products, a specimen of the product may be taken and placed into a clean bottle or vial with a closure or a syringe to reach ambient temperature. If the product requires mixing for uniformity, mix it before opening in accordance with any instructions specified on the package label. Shaking liquids, such as flavored milk, often entraps air that will affect volume measurements, so use caution when testing these products. Often, less air is entrapped if the package is gently rolled to mix the contents.

3. The instrument must at ambient temperature. Avoid causing condensation within the unit. Condensation could cause instrument malfunction and harm.
4. Validate the digital density meter per the manufacturer's calibration instructions. Instrument shall calibrate within allowable density range (± 0.0005)
5. Ensure the digital density meter is clean prior to testing. Any residual liquid should be drained and the unit should be flushed with a small amount of the sample to be tested.
6. Follow the manufacturer's instructions to select the correct method, when using a meter with built in correction factors, and measure the density of the sample using the built-in pump or syringe. Fill sample gently. If gas or air bubbles are present drain sample and refill. Note: a syringe may be desirable to allow sample specimen to achieve ambient temperature prior to introduction of specimen into testing cell.
7. Once digital density meter has stabilized (maintained reading $\pm 0.5^{\circ}\text{F}$ for 10 seconds) record density and temperature as indicated on instrument.
8. Apply coefficient of expansion (Alpha) to correct to the reference temperature. See Table 3-X. Reference Temperatures of Liquids. If the Alpha correction is not known, then factor can be calculated using the below formula. Note: some digital density meters may be programmed to automatically apply this correction.

Calculating the Temperature Coefficient Alpha

$$\text{Temperature coefficient Alpha} = \left| \frac{\rho_1 - \rho_2}{T_1 - T_2} \right|$$

ρ_1 density at temperature T_1

ρ_2 density at temperature T_2

T_1 temperature at initial measurement

T_2 temperature at second measurement

9. Apply viscosity correction if viscosity > 85 centipoise at 21°C (70°F) by adding the value in Table 3.X. Density Measurement to your density measurement.

Note: Some units may be programmed to automatically apply. See Table 3.X. Approximate Viscosities of Common Materials for viscosity.

10. Calculate the Conventional Mass using the formula below (This value will be approximately 0.999) to correct density to apparent density, to correct density to apparent density of product at prevailing atmospheric pressure or for higher accuracy calculate apparent density by using the following formula (terms as defined in NIST Standard Operating Procedure SOP 2 “Recommended Standard Operating Procedure for Applying Air Buoyancy Corrections <https://www.nist.gov/pml/weights-and-measures/laboratory-metrology/standard-operating-procedures>

3.2.3. Calculate the Conventional Mass⁶ of S_c , CM_{Sc} .

$$CM_{Sc} = \frac{M_{Sc} \left(1 - \frac{\rho_n}{\rho_{Sc}} \right)}{\left(1 - \frac{\rho_n}{8.0} \right)}$$

11. Drain the instrument and repeat Steps 6–10 on a second specimen of the same package for verification of first measurement.
12. Compare the two readings, they must agree within 0.0003 g/cc. Calculate the average density of the two specimens from the sample. If the difference of two readings is greater than 0.0003 g/cc, discard results and repeat testing of sample. Air or undissolved gas will cause erroneous measurement errors. User of the test method shall always visually inspect for undissolved gas in measurement tube for valid test. User must investigate the cause such as air, operator technique, instrument stability, etc. before repeating more than two tests.
13. Repeat testing for second package of the lot.
14. Calculate the average of sample 1 and sample 2; the two results must agree within 0.0003 g/cc. If the difference between the densities of the two packages exceeds 0.0003 g/cc, use the volumetric procedure in Section 3.3. “Volumetric Test Procedure for Non-Viscous Liquids.”
15. Convert the unit of the average density back to the unit of measure specified on the package label i.e., pounds/fluid ounce, etc.
16. The digital density meter must be stored clean. After final use of the day or extended period of time, the instrument should be drained and cleaned following the manufacturer’s recommended cleaning procedures. Two cleaning agents should be used. The first cleaning liquid removes sample residue and the second cleaning liquid removes the first cleaning liquid. See Table 3.X. Cleaning Agents for examples of cleaning agents recommended by a particular digital density meter manufacturer.
- NOTE: If the unit will be immediately used to measure another sample of similar composition the unit may be drained and flushed with new sample three times before next analysis.
17. Connect digital density meter to a source of low pressure, such as an aquarium air pump, to dry the unit.

Table X.X. Density Measurement

Calculate the density of air at the temperature of test

using the following equation:

$$d_{air}, \text{ g/mL} = 0.001293[273.15/T][P/760]$$

where:

T = temperature, K, and

P = barometric pressure, torr.

<u>°C</u>	<u>mmHg</u>	<u>d_{air}, g/mL</u>
<u>15.56</u>	<u>760</u>	<u>0.001223314</u>

Table X.X. Approximate Viscosities of Common Materials

<u>Material</u>	<u>Viscosity in Centipoise</u>	<u>Correction</u>
<u>Water</u>	<u>1 cps</u>	
<u>Milk</u>	<u>3 cps</u>	
<u>SAE 10 Motor Oil</u>	<u>85–140 cps</u>	<u>0.0003</u>
<u>SAE 20 Motor Oil</u>	<u>140–420 cps</u>	<u>0.0006</u>
<u>SAE 30 Motor Oil</u>	<u>420–650 cps</u>	<u>0.0007</u>
<u>SAE 40 Motor Oil</u>	<u>650–900 cps</u>	<u>0.0007</u>
<u>Castrol Oil</u>	<u>1,000 cps</u>	<u>0.0008</u>
<u>Karo Syrup</u>	<u>5,000 cps</u>	<u>0.0008</u>
<u>Honey</u>	<u>10,000 cps</u>	<u>0.00085</u>
<u>Chocolate</u>	<u>25,000 cps</u>	<u>0.0009</u>
<u>Ketchup</u>	<u>50,000 cps</u>	<u>0.0009</u>
<u>Mustard</u>	<u>70,000 cps</u>	<u>0.0009</u>
<u>Sour Cream</u>	<u>100,000 cps</u>	<u>0.0009</u>
<u>Peanut Butter</u>	<u>250,000 cps</u>	

Anton Paar DMA 35 Instrument Manual page 54

***Do not introduce ethanol or other alcohols into instrument without first flushing all milk products from instruments.**

3.X.3. Evaluation of Results

Follow the procedures in Section 2.3.7. “Evaluate for Compliance” to determine lot conformance.

<u>Table X.X. Cleaning Agents</u>		
<u>Commodity</u>	<u>Cleaning Liquid 1</u>	<u>Cleaning Liquid 2</u>
<u>Petroleum products</u>	<u>Toluene, petroleum naptha, petroleum ether, n-nonane, cyclohexane</u>	<u>Ethanol</u>

<u>Battery acid</u>	<u>Tap water</u>	<u>Ultra-pre (bi-distilled or deionized) water</u>
<u>Liquid soap & detergent, shampoo</u>	<u>Tap water</u>	<u>Ultra-pre (bi-distilled or deionized) water</u>
<u>Salad dressing, mayonnaise</u>	<u>Petroleum naptha, dish washing agent in water</u>	<u>Ethanol</u>
<u>Suntan lotion</u>	<u>Tap water</u>	<u>Ethanol</u>
<u>Spirits</u>	<u>Tap water</u>	<u>Ultra-pre (bi-distilled or deionized) water</u>
<u>Grape juice, syrup</u>	<u>Warm tap water</u>	<u>Ultra-pre (bi-distilled or deionized) water</u>
<u>Milk*</u>	<u>Tap water, enzymatic lab cleaner</u>	<u>Ultra-pre (bi-distilled or deionized) water</u>

<u>Package Checking Calculation Worksheet - Density Meter Method</u>						
		<u>Package No.</u>				
<u>Product</u>	<u>10W-30 Oil</u>	<u>8/28/2019</u>	<u>Run 1</u>	<u>Run 2</u>	<u>Run 3</u>	<u>Run 4</u>
<u>Barometer</u>	<u>air temp, °C</u>	-	<u>20</u>	<u>20</u>	<u>20</u>	<u>20</u>
-	<u>barometric press, mmHg</u>	-	<u>760</u>	<u>760</u>	<u>600</u>	<u>760</u>
<u>Density</u>	<u>psubstance (g/cc)</u>	-	<u>0.8500</u>	<u>0.8501</u>	<u>0.8500</u>	<u>0.8501</u>
<u>Meter</u>	<u>temperature substance</u>	<u>tproduct, °C</u>	<u>21</u>	<u>20.5</u>	<u>20</u>	<u>19.5</u>
<u>Table</u>	<u>coefficient of expansion</u>	<u>alpha</u>	<u>0.000830</u>	<u>0.000830</u>	<u>0.000830</u>	<u>0.000830</u>
-	<u>reference temperature</u>	<u>treference, °C</u>	<u>15.56</u>	<u>15.56</u>	<u>15.56</u>	<u>15.56</u>
<u>Table</u>	<u>Viscosity Correction</u>	<u>g/cc</u>	<u>0.0003</u>	<u>0.0003</u>	<u>0.0003</u>	<u>0.0003</u>
<u>Scale</u>	<u>total weight</u>	<u>pounds</u>	<u>7.113</u>	<u>7.113</u>	<u>7.120</u>	<u>7.120</u>
<u>Weight</u>	<u>tare</u>	<u>pounds</u>	<u>0.000</u>	<u>0.000</u>	<u>0.000</u>	<u>0.000</u>
-	<u>net weight</u>	<u>pounds</u>	<u>7.113</u>	<u>7.113</u>	<u>7.120</u>	<u>7.120</u>
-	<u>Apparent Density</u>	-	<u>0.8531</u>	<u>0.8528</u>	<u>0.8526</u>	<u>0.8521</u>
-	<u>Test Package Content</u>	<u>Gallons</u>	<u>0.999</u>	<u>0.999</u>	<u>1.001</u>	<u>1.001</u>
-	-	<u>over/short(+/-)</u>	<u>-0.001</u>	<u>-0.001</u>	<u>0.001</u>	<u>0.001</u>
-	<u>calculated from above net wt</u>	<u>fluid ounces</u>	<u>127.9</u>	<u>127.9</u>	<u>128.1</u>	<u>128.2</u>
-	-	<u>over/short(+/-)</u>	<u>-0.1</u>	<u>-0.1</u>	<u>0.1</u>	<u>0.2</u>
-	-	<u>ml</u>	<u>3782</u>	<u>3783</u>	<u>3788</u>	<u>3790</u>
-	-	<u>over/short(+/-)</u>	<u>-3</u>	<u>-2</u>	<u>3</u>	<u>5</u>
-	-	<u>liter</u>	<u>3.782</u>	<u>3.783</u>	<u>3.788</u>	<u>3.790</u>
-	-	<u>over/short(+/-)</u>	<u>-0.003</u>	<u>-0.002</u>	<u>0.003</u>	<u>0.005</u>

<u>Density of air</u>		<u>0.0012</u>	<u>0.0012</u>	<u>0.0010</u>	<u>0.0012</u>
<u>density reference temp</u>		<u>0.8541</u>	<u>0.8539</u>	<u>0.8534</u>	<u>0.8532</u>
<u>Apparent Density</u>		<u>0.8531</u>	<u>0.8528</u>	<u>0.8526</u>	<u>0.8521</u>
<u>App Mass, lb (gal @ ref T)</u>	<u>lb/gal</u>	<u>7.119144</u>	<u>7.117038</u>	<u>7.115147</u>	<u>7.111149</u>
-	<u>lb X factor</u>	<u>gal/lb</u>	<u>0.140466</u>	<u>0.140508</u>	<u>0.140545</u>
-	-	<u>floz/lb</u>	<u>17.980</u>	<u>17.985</u>	<u>17.990</u>
-	-			<u>18.000</u>	<u>18.000</u>

Background/Discussion:

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Mr. Ronald Hayes*
 Missouri Department of Agriculture
 (573) 751-4316, ron.hayes@mda.mo.gov (*In 2020, Mr. Hayes retired from the Missouri Department of Agriculture)

The submitter provided proposed test procedures prior to the 2019 Fall Regional Association Meetings for consideration at the 2020 NCWM Interim Meeting.

Current test procedures are slow and awkward due to the need of using borosilicate glassware for package checking. Digital density meters are fast, use small samples size (2 ml) and have built in thermometers.

Digital density meters are fast and accurate in comparison with recognized NIST Handbook 133 test procedures for viscous fluids. Using digital density meters equipped with built-in API density tables will not require the cooling samples to 60 °F. There is no need to “wet down” volumetric flasks before each measurement. Most non-food products may be recovered without contamination. Only a small sample size (2 ml) of the product is needed for testing. There is no need for a partial immersion thermometer or volumetric flasks. The current method in “Section 3.4. Volumetric Test Procedures for Viscous Fluids – Headspace” does not work for plastic oblong bottles often used for motor oil. This new test procedure would eliminate the entrapment of air in testing viscous fluids (i.e., motor oil, DEF, antifreeze, syrups, etc.) Well established ASTM and other international standard test methods are available with precision statements.

At the 2016 NCWM Interim Meeting, Mr. Ron Hayes spoke regarding his submittal of this proposal. The Committee believes this item has merit and requested that the submitter form a focus group to further develop. Mr. Hayes agreed that this item needs have additional data gathered to support the use and accuracy of the digital density meters. API remarked that they would like to assist the task group on this project. The Committee is making this a Developing Item.

At the 2017 NCWM Interim Meeting, Mr. Hayes asked for the states to participate in a round robin to compare the current handbook test procedures with the density meter. The Committee encouraged the Mr. Hayes to develop a proposal by Fall 2017.

At the 2018 NCWM Interim Meeting, Mr. Hayes gave a presentation regarding this item. Mr. Lou Sakin (Town of Hopkinton, Massachusetts) recommended this item be assigned with a specific timetable for development. No other comments were heard on this developing item. The L&R Committee recommends this item as Developing to allow the submitter to finish developing test procedures and review with NIST OWM staff.

At the 2018 NCWM Annual Meeting, Mr. Hayes provided an update that he has been doing testing and getting repeatability with his results. Mr. Hayes remarked that when NIST OWM was teaching a NIST Handbook 133 Basic Course in Missouri, he had an opportunity to use the density meter on some of the test procedures.

At the 2019 NCWM Interim Meeting, Mr. Hayes stated he is close to having an updated proposal posted to the NCWM website. Mr. Craig VanBuren (Michigan) stated his desire to see this item remain developing. The Committee recommends this item remain Developing with the stipulation that, if new language is not provided by the 2019 NCWM Annual Meeting, the item will be Withdrawn.

At the 2019 NCWM Annual Meeting, Mr. Hayes submitted a draft proposal, and it is posted on the NCWM website under L&R supporting documents. Mr. Hayes continues to work with states who use the density meters to develop an item under consideration. Mr. Hayes is continuing his work on the alpha correction.

At the 2020 NCWM Interim Meeting, Mr. Kevin Upshulte (Missouri), and Mr. Charles Stutesman (Kansas) remarked that the submitter has fully developed the language and it is ready to move forward. Ms. Lisa Warfield (NIST OWM) remarked that the purpose statement identifies this item is to be used for motor oils, diesel exhaust fluid, and antifreeze. It appears with the latest language has now includes juices, syrups, and vegetable oils. The data submitted only reflects one brand of density meters and there are many types available for use. The Committee would like the submitter to take into consideration comments heard at the regional and NCWM meetings in further development this item. The Committee did not believe this item is fully developed and returned to the submitter for additional development.

At the 2021 NCWM Interim Meeting, the Committee reviewed the Regional Association reports. They were unable to locate the updated language document mentioned in the CWMA 2020 Interim Report (either on the CWMA or NCWM website).

- Review of comments from the submitter within the S&T report (2017) which stated, “*Fundamental Considerations of NIST Handbook 44 be considered in defining the suitability criteria of any density meter used in testing. Ms. Butcher also suggested it may be that the NIST EPOs, training materials, or other guidance documents might be a more appropriate place(s) to specify details regarding the selection and use of this equipment and to provide details on its specifications.*” and “*the item should be included in other documents such as NIST Handbooks 112 and 105.*”
- The test procedure should be written in a format that an inspector can use in the field. This would eliminate the use of active spreadsheets.
- The purpose was for testing of viscous fluids such as motor oils, diesel exhaust fluid (DEF), and antifreeze. The submitter should refocus on those particular items.
- There is a lack of a step-by-step procedure. The test procedure should be done in a clear and concise format so that inspectors understand it.
- Copyrighted materials cannot be reproduced without permission from the manufacturer.
- Look into other digital density meters in the marketplace.
- Where does an inspector find the coefficient of expansion for a product? There is a table referenced but not found within the documents “**See Table 3-X. Reference Temperatures of Liquids.**”
- The correction process is written in the top part of the Table 3.X.X. but where do the “approximate viscosities” and “corrections” come from? Has it been verified? If so, where is the supporting data?
- Do all meters use the same correction values or are they unique to the different devices?
- Do all the meters have a feature that allows for the correction function to be disabled to allow an inspector to enter a known correction factor for the product? It should be noted that the correction factor must be recorded so that the manufacturer knows exactly how the density was obtained.
- Provide data to the Conference on the testing and repeatability.

- Inspector may believe that if they are in NIST HB133 they are appropriate for use in enforcement. At best they should only be used audit inspections. The cost of the equipment should be factored into whether there is value to develop for audit only type inspections.

For the reasons stated above the Committee recommended this item be Withdrawn.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the 2019 WWMA Annual Meeting, the Committee heard testimony that the language needs to be written generically for all density meter types. The WWMA reviewed the background information and many of the same concerns and issues cited were raised at their meeting. The submitter’s purpose statement on his proposal specified that the test procedure would be for motor oils, diesel exhaust fluid (DEF) and antifreeze however, the submitted document does not correlate with this purpose statement.

The Committee believes that a proposal for the device specifications should be submitted prior to the finalization of the NIST HB133 proposal. Suggestions were provided to the submitter from the S&T in 2017 which stated, “*Fundamental Considerations of NIST Handbook 44 be considered in defining the suitability criteria of any density meter used in testing. Ms. Butcher also suggested it may be that the NIST EPOs, training materials, or other guidance documents might be a more appropriate place(s) to specify details regarding the selection and use of this equipment and to provide details on its specifications.*” and “*the item should be included in other documents such as NIST Handbooks 112 and 105.*”

The Committee would like to see this remain Developing with the submitter addressing the issues that the WWMA and other regional associations have documented. The WWMA recommended that this item be Withdrawn if updated work efforts are not submitted to the NCWM L&R by January 2020.

At the 2019 SWMA Annual Meeting, the Committee reviewed the modified proposal and data submitted by Mr. Ron Hayes (submitter). This procedure needs to be written in generic format to meet specifications for meters that are in the marketplace. The Committee would like this item to be Developing. They also request that the submitter change his purpose statement or apply the test procedure to what is currently stated in the document.

At the 2019 NEWMA Interim Meeting, no comments were heard during open hearings. The Committee believes the item should remain on the agenda as a developing item. The Committee further believes that final language should be provided by the submitter for the 2020 Interim Meeting. Since this item has remained on the agenda since 2016, if no additional information is supplied by the 2020 Interim Meeting, it should be Withdrawn.

At the 2020 CWMA Interim Meeting, Mr. Hayes commented that he updated the language that identifies a few additional test fluids to obtain better precision. Mr. Hayes is also incorporating recommendations that he received from Mr. David Sefcik (NIST OWM). Mr. Hayes still needs to convert the density meter table into a usable format for regulators. Currently, Mr. Hayes is waiting for an additional instrument to finish the method. Ms. Warfield (NIST OWM) commented that there are concerns with this test procedure, particularly the lack of a step-by-step procedure. Ms. Warfield also commented that the method should be developed to use with different device manufacturers, rather than just one. Ms. Warfield appreciates continued collaboration with Missouri. Mr. Stutesman commented that he believes the item should be assigned to a task group to allow for more expedient development and inclusion of other devices. Mr. Hayes further commented that the method is not specific to a single device and is intended to be used for any manufacturer that meets the technical specifications. Mr. Hayes is also taking photos to illustrate steps on how to complete the testing. Ms. Warfield agrees a work group might help finalize this method. Mr. Don Onwiler (Executive Director, NCWM) commented that a WG is appointed by the NCWM Chair. Mr. Hayes agreed the item should be moved to Assigned status. The Committee recommended that the NCWM L&R Committee consider the creation of a work group and include a NIST Technical Advisor, as well as leave the item as Assigned.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports to review these documents.

NET-20.2 D Section 4.5. Polyethylene Sheeting, Bags and Liners.

Source:

New York State Weights and Measures

Purpose:

Remove antiquated terminology used for test equipment to test the thickness of polyethylene sheeting, bags and liners.

Item Under Consideration:

Amend NIST Handbook 133 as follows:

4.5. Polyethylene Sheeting, Bags, and Liners

Most polyethylene products are sold by length, width, thickness, area, and net weight. Accordingly, this procedure includes steps to test for each of these measurements.

(Amended 2017)

4.5.1. Test Equipment

- A scale that meets the requirements in Section 2.2. “Measurement Standards and Test Equipment.”
- Steel tapes and rulers. Determine measurements of length to the nearest division of the appropriate tape or ruler.
 - Metric units:

For labeled dimensions 400 mm or less, linear measure: 300 mm in length, 1 mm divisions; or a 1 m ruler with 0.1 mm divisions, overall length tolerance of 0.4 mm.

For labeled dimensions greater than 400 mm, 30 m tape with 1 mm divisions.
 - U.S. customary units:

For labeled dimensions 25 in or less, use a 36 in ruler with $\frac{1}{64}$ in or $\frac{1}{100}$ in divisions and an overall length tolerance of $\frac{1}{64}$ in.

For dimensions greater than 25 in, use a 100 ft tape with $\frac{1}{16}$ in divisions and an overall length tolerance of 0.1 in.
- Deadweight dial micrometer (or equal) equipped with a flat anvil, 6.35 mm or ($\frac{1}{4}$ in) diameter or larger, and ~~a 4.75 mm ($\frac{3}{16}$ in) diameter flat surface on the head of the spindle~~ head with a diameter between 3.20 mm ($\frac{1}{8}$ in) and 12.70 mm ($\frac{1}{2}$ in).

Note: Electronic or other instruments that provide equivalent accuracy are also permitted.

- ~~The mass of the probe head (total of anvil, weight 102 g or [3.6 oz], spindle, etc.) must total 113.4 g (4 oz). The pressure exerted by the instrument should not exceed 70 kPa (10 psi).~~
- The anvil and spindle head surfaces should be ground and lapped, parallel to within 0.002 mm (0.0001 in), and should move on an axis perpendicular to their surfaces.

- The dial spindle should be vertical, and the dial should be at least 50.8 mm (2 in) in diameter.
- The dial indicator should be continuously graduated to read directly to 0.002 mm (0.0001 in) and should be capable of making more than one revolution. It must be equipped with a separate indicator to indicate the number of complete revolutions. The dial indicator mechanism should be fully jeweled.
- The frame should be of sufficient rigidity that a load of 1.36 kg (3 lb) applied to the dial housing, exclusive of the weight or spindle presser foot, will not cause a change in indication on the dial of more than 0.02 mm (0.001 in).
- The indicator reading must be repeatable to 0.001 2 mm (0.000 05 in) at zero.
- The micrometer should be operated in an atmosphere free from drafts and fluctuating temperature and should be stabilized at ambient room temperature before use.

Note: Other instruments are commercially available that utilize different methods of measuring thickness. Instruments of this nature are acceptable provided they meet or exceed the precision requirements noted within the latest version of ASTM D6988 “Guide for Determination of Thickness of Plastic Film Test Specimens” and the requirements of the applicable material or product specification or applicable test standards.

- Gage blocks covering the range of thicknesses to be tested should be used to check the accuracy of the micrometer
- T-square

Background/Discussion:

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Mr. Mike Sikula
New York Department of Agriculture and Markets
(518) 457-3452, mike.sikula@agriculture.ny.gov

This will update the test equipment to allow for the use of other type of instruments to perform the test procedure. In addition, it aligns the test equipment within the latest version of ASTM D6988 “Guide for Determination of Thickness of Plastic Film Test Specimens”.

At the 2021 NCWM Interim Meeting, Mr. Kurt Floren (Los Angeles County, California) had concerns with the spindle head having a diameter of 3.20 mm and 12.70 mm, due to the type of product being tested as this may create inconsistencies within the thickness. Mr. Floren would like to see data that justified this range. In addition, there are many other instruments that are available in the marketplace to do testing. Therefore, Mr. Floren has concerns with this item proceeding as currently written. What is the current industry practice with this type of procedure? The Committee would like the submitter to review the recommendations that came out of the Fall Regional Association meetings. The submitter should also address any procedural differences between the current procedure and use of an electronic instrument. Mr. Kevin Schnepf (California) noted that ASTM D6988 has a maximum pressure of 70 kPa (10 psi) for thinner films and for thicker films, a pressure range between 160 and 185 kPa (23 and 27 psi). Mr. Floren expressed concerns with the variability in plastics and the striations occur in plastics. The Committees did not have any supporting data or repeatability test and asked that the developer review all the comments within this item by Fall Regional Association Meetings. The Committee recommended this item as a Developing item.

At the 2021 NCWM Annual Meeting, Mr. Willis provided an update that they are planning to do testing to provide data as requested by the Committee and regional associations. Mr. Schnepf further supported the development of

language and request that it be harmonized with ASTM D6988 for the thicker densities. The Committee continues to encourage the submitter with developing this item by the 2022 NCWM Interim Meeting.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the 2019 WWMA Annual Meeting, Mr. Floren provided modifications to the language to the Committee. The Committee addressed his concerns by modifying the language as it appears below. The WWMA cautions that the ASTM D6988 “Standard Guide for Determination of Thickness of Plastic Film Test Specimens” needs to be researched further to make sure it is applicable. It appears that ASTM D6988 is a Guide and not a specification standard. There is a note within the standard that appears to prohibit the use for this application. The Committee is requiring data from the submitter that changes to the micrometer specifications are justified. Further development of the entire test procedure (not just test equipment) will need to occur for its applicability for the electronic instrument. The Committee recommended this be a Developmental item requiring confirmation of the applicability of the ASTM standard.

4.5. Polyethylene Sheeting, Bags, and Liners

Most polyethylene products are sold by length, width, thickness, area, and net weight. Accordingly, this procedure includes steps to test for each of these measurements.

(Amended 2017)

4.5.1. Test Equipment

- A scale that meets the requirements in Section 2.2. “Measurement Standards and Test Equipment.”
- Steel tapes and rulers. Determine measurements of length to the nearest division of the appropriate tape or ruler.
 - Metric units:

For labeled dimensions 400 mm or less, linear measure: 300 mm in length, 1 mm divisions; or a 1 m ruler with 0.1 mm divisions, overall length tolerance of 0.4 mm.

For labeled dimensions greater than 400 mm, 30 m tape with 1 mm divisions.
 - U.S. customary units:

For labeled dimensions 25 in or less, use a 36 in ruler with $\frac{1}{64}$ in or $\frac{1}{100}$ in divisions and an overall length tolerance of $\frac{1}{64}$ in.

For dimensions greater than 25 in, use a 100 ft tape with $\frac{1}{16}$ in divisions and an overall length tolerance of 0.1 in.
- **Thickness Measuring Device (use one of the following)**
 - Deadweight dial micrometer (or equal) equipped with a flat anvil, 6.35 mm or ($\frac{1}{4}$ in) diameter or larger, and ~~a 4.75 mm ($\frac{3}{16}$ in) diameter flat surface on the head of the spindle~~ **head with a diameter between 3.20 mm ($\frac{1}{8}$ in) and 12.70 mm ($\frac{1}{2}$ in).**

~~Note: Electronic or other instruments that provide equivalent accuracy are also permitted.~~

~~— The mass of the probe head (total of anvil, weight 102 g or [3.6 oz], spindle, etc.) must total 113.4 g (4 oz). The pressure exerted by the instrument should not exceed 70 kPa (10 psi).~~

- The anvil and spindle head surfaces should be ground and lapped, parallel to within 0.002 mm (0.0001 in), and should move on an axis perpendicular to their surfaces.
- The dial spindle should be vertical, and the dial should be at least 50.8 mm (2 in) in diameter.
- The dial indicator should be continuously graduated to read directly to 0.002 mm (0.0001 in) and should be capable of making more than one revolution. It must be equipped with a separate indicator to indicate the number of complete revolutions. The dial indicator mechanism should be fully jeweled.
- The frame should be of sufficient rigidity that a load of 1.36 kg (3 lb) applied to the dial housing, exclusive of the weight or spindle presser foot, will not cause a change in indication on the dial of more than 0.02 mm (0.001 in).
- The indicator reading must be repeatable to 0.001 2 mm (0.000 05 in) at zero.
- The micrometer should be operated in an atmosphere free from drafts and fluctuating temperature and should be stabilized at ambient room temperature before use.

~~Note: Other instruments are commercially available that utilize different methods of measuring thickness. Instruments of this nature are acceptable provided they meet or exceed the precision requirements noted within the latest version of ASTM D6988 “Guide for Determination of Thickness of Plastic Film Test Specimens” and the requirements of the applicable material or product specification or applicable test standards.~~

- Electronic Instrument that meet or exceed the precision requirements within the latest version of ASTM D6988 “Guide for Determination of Thickness of Plastic Film Test Specimens” and the requirements of the applicable material or product specification or applicable test standards

- Gage blocks covering the range of thicknesses to be tested should be used to check the accuracy of the micrometer
- T-square

At the 2019 SWMA Annual Meeting, the Committee did not hear any comments regarding this item from regulators. It was noted that if you are adding electronic instruments then the test procedure should also address them throughout the test procedure. The SWMA encourages the submitter to develop this proposal.

At the 2020 NEWMA Interim Meeting, Mr. Sikula reported this item is fully developed.

At the 2021 NEWMA Annual Meeting, Mr. Willis commented that they are looking to provide an update on this item at the 2021 Fall Regional Association meetings, after reaching out to the ASTM D20 Committee and gathering and incorporating additional data for further development. The Committee believed this item should remain a Developing item.

At the 2020 CWMA Interim Meeting, Ms. Warfield remarked that she reached out to Mr. Sikula and Mr. Willis and recommended that they contact the D20 ASTM Committee for further review on this item. Mr. Loren Minnich (Kansas) believes there is a word missing between the word “of” and “thickness” there should be a verb. Ms. Warfield checked and indicated the word “measuring” should be inserted. Based on comments heard during the open hearing, the Committee believes the item should remain as a Developing item.

At the CWMA 2021 Annual Meeting, Ms. Warfield commented that the submitter is hoping to have a revision for review at the 2022 NCWM Interim Meeting. Ms. Warfield further commented that the developer requested any comments or recommendations be provided by the 2021 Fall Regional Association Meetings. CWMA believes this item should remain a developing item until additional data is collected as requested at the NCWM 2021 Interim Meeting.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports to review these documents.

OTH – OTHER ITEMS

OTH-07.1 D Fuels and Lubricants Subcommittee

Source:

NCWM Fuels and Lubricants Subcommittee (FALS)

Purpose:

Provide an update of the activities of this Subcommittee which works on direction from and reports to the L&R Committee. The mission of FALS is to assist the L&R Committee in the development of agenda items that affect Handbook 130, Uniform Fuels and Automotive Lubricants Inspection Law and Uniform Fuels and Automotive Lubricants Regulation. The Subcommittee consists of regulators and associate members who have subject matter expertise in the area of fuels and lubricants. The Subcommittee will be called upon to aid in the development, provide guidance, and help establish NCWM position on items concerning fuels and lubricants.

Item Under Consideration:

Not Applicable.

Background/Discussion:

This item is to provide a report on the activities of the Fuels and Lubricants Subcommittee (FALS) which reports and provides recommendations to the Laws and Regulations Committee.

For more information or to provide comment, please contact the FALS Chair:

Mr. Bill Striejewski
Nevada Department of Agriculture/Division of Consumer Equitability
(775) 353-3792, wstrijewski@agri.nv.gov

FALS met on Sunday, January 26, 2020, at the NCWM Interim Meeting in Riverside, California to review the agenda items related to fuel and automotive fluid standards before the L&R Committee. There was discussion of the items assigned to FALS, MOS-18.2 Reorganize the MOS, and Item Block 3 (B3) FLL-18.1 Section 8.6, MOS Section 2.33 Oil, and FLR 18.1. Section 2.14, 3.13, and 7.2. There was additional time for FALS discussed additional fuel related items on the 2020 NCWM Interim L&R agenda: MOS-20.3, Item Block 2 (B2) Tractor Hydraulic Fluid, Item Block 4 (B4) E15 Waiver, and FLR-20.2. Section 1.23 Ethanol Flex Fuel and 2.1.1. Gasoline and Gasoline-Oxygenate Blends. The meeting also provided a brief update concerning the focus group requested by L&R Committee at the 2019 NCWM Annual Meeting. Finally, there was discussion of BOD Item SPB-5- Bylaws, Article IX – Committees, which would elevate FALS to a standing Committee. The following is a brief summary of these items mentioned.

Update on EPA Rule Change Focus Group: At the 2019 NCWM Annual Meeting the L&R Committee tasked the FALS to review regulations under 40 CFR 80.20 to ensure there are no conflicts within NIST Handbook 130, Fuels and Automotive Lubricants Regulations. Since that time, the EPA Streamlining Rule has been published. During Sunday's FALS meeting, Mr. Prentiss Searles (API and chair of the Focus Group) provided a summary of the group's work. Mr. Searles commented that the group believes the EPA streamlining process has satisfied all outstanding issues and the Focus Group should be disbanded.

FALS structure discussions and Focus Group: At the 2020 Interim Meeting where the Board of Directors brought forth an Informational Item SPB-5, which would explore elevating FALS from a Subcommittee to a standing Committee. This item arose from concerns over the efficiency of and process within the Subcommittee. In response, FALS began work to formalize procedures to address these concerns. After several productive calls and web conferencing meetings, a Focus Group was formed, composed of a broad range of stakeholders. This group produced a draft document of standard operating procedures (SOP) that was distributed to the subcommittee membership for review. A meeting of the membership was held to gather comments and concerns about the draft. The officers then considered those comments to generate a final product, which was been distributed to the membership and submitted to the Board of Directors.

Item Block 6 Transmission Fluid Focus Group (B6: MOS-21.1. Section 2.36.2. Labeling and Identification of Transmission Fluid and B6: FLR-21.2. Section 3.14.1. Labeling and Identification of Transmission Fluid): FG Chair Joanna Johnson, (on behalf of the Automotive Oil Change Association [AOCA]) provided an update on the work of the FG since its formation in January 2021, and Mr. Ron Hayes (retired – Missouri) also provided an update on the OEM specification table that is under development. While the model regulation in NIST Handbook 130 is sufficient, there is no licensing system for transmission fluid as there is with engine oils. The FG is continuing its work to harmonize the various standards across the industry.

EPA Streamlining Rule Focus Group: After a multiyear process, the EPA Streamlining Rule was published in the Federal Register in December 2020 and enacted on January 1, 2021. This FG is chaired by Ms. Marilyn Herman (Herman & Associates) was created during the 2021 NCWM Interim Meeting to examine the impact of the Streamlining Rule on NIST Handbook 130 to determine what updates may be required. The FG was composed of State regulators, Ethanol, Biodiesel, Auto, Petroleum Marketers, Refiners, Consultants, and the L&R NIST Technical Advisor. Because of the sense of time urgency, their efforts were narrowed to references to 40 CFR 80, which have been moved to a new section 40 CFR 1090.

HB 130 Uniform Regulation for the Method of Sale of Commodities:

- **Section 2.20.2. Documentation for Dispenser Labeling Purposes** - Update the CFR citation 40 CFR 80.1503 to 40 CFR 109.1110
- **Section 2.20.3. EPA Labeling Requirements** - Update the CFR citation from 40 CFR 80.1501 to 40 CFR 1090.1510

NIST Handbook 130 Uniform Fuels and Automotive Lubricants Regulation:

- **Section 2.1.2. Gasoline-Ethanol Blends** - Update CFR citation 40 CFR 80.27(d) to 40 CFR 1090.215(b)
- **Section 3.2.5. Documentation for Dispenser Labeling Purposes** - Update CFR citation 40 CFR 80.1503 to 40 CFR 1090.1110
- **Section 3.2.6. EPA Labeling Requirements** – Update CFR citation 40 CFR 80.1501 to 40 CFR 1090.1510

The Focus Group discussed the fact that although there may be some differences in the actual EPA Product Transfer Document (PTD) requirements between Part 80 and 1090, the Focus Group considers updating these references to CFR Part 1090 would be editorial since the language in NIST Handbook130 continues to merely incorporate EPA requirements by reference regardless of their location.

The FG's final report was distributed to FALS membership at the beginning of July; however, distribution to the full NCWM membership did not occur until July 19, following the FALS meeting at the Annual Meeting on Sunday, July 18th. During the Sunday FALS meeting, there was concern expressed that the FG had not examined changes in terminology in appropriate depth and had not included those changes in their final report. As the work of the FG was presented during Open Hearings as part of an FALS Agenda Item designated as Developing, it was not possible for the L&R Committee to take comments from attendees.

The L&R Committee reviewed the NCWM Committee Handbook and Policy and Bylaws and felt this item did not meet the criteria for an editorial or national “priority.” Members were notified of this change in an email sent out to NCWM membership the first day of the 2021 NCWM Annual Meeting. The L&R Committee did add an item on their addendum that membership voted in that read, “NIST will post a notice on the NIST OWM website under the NIST Handbook 130, 2022 edition that notifies users of these new citations and hyper-linked for easy access. It is also anticipated that this will be included in the NIST OWM newsletter. Additionally, NCWM will provide a notice out to all NCWM members.” The NCWM L&R Committee encouraged FALS to submit a Form 15 to the NCWM for consideration at the next NCWM Annual Meeting. It was noted by the FALS Chair that upon receipt of the FG recommendation the FG was disbanded.

The Fuels and Lubricants Subcommittee (FALS) met in a hybrid fashion, with attendees both in-person and via a virtual meeting platform at the 2021 NCWM Annual Meeting in Rochester, New York on Sunday, July 18, 2021, to review items related to fuel and automotive fluid standards that appear on the L&R agenda. FALS discussed the item block that has been assigned to the subcommittee. There was also discussion of one item with Voting status that has been impacted by events since the 2021 NCWM Interim Meeting. There were also updates on four existing focus groups, including one on the recently finalized EPA Streamlining Rule. There was a presentation given on the work and results of this Focus Group. Three of the Focus Groups (all but the group working on Item Block 6) were disbanded before or during the 2020 NCWM Annual Meeting.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the WWMA 2019 and 2020 Annual Meetings, there were no updates provided.

At the NEWMA, CWMA, and SWMA 2019 and 2020 Annual Meetings there were no updates provided.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports to review these documents.

OTH-11.1 D Packaging and Labeling Subcommittee

Source:

NCWM Packaging and Labeling Subcommittee (PALS)

Purpose:

Provide an update of the activities of this Subcommittee which reports to the L&R Committee. The mission of PALS is to assist the L&R Committee in the development of agenda item, NCWM positions and new standards related to packaging and labeling. The Subcommittee will also be called upon to provide important and much needed guidance to the regulatory and consumer packaging communities on difficult questions. PALS will report to NCWM L&R Committee. The Subcommittee is comprised of a Chair, eight voting members, and anyone interested in packaging and labeling standards.

Item Under Consideration:

Not Applicable.

Background/Discussion:

This item is to provide a report on the activities of the Packaging and Labeling Subcommittee which reports and provides recommendations to the Laws and Regulations Committee.

For more information or to provide comment, please contact the PALS Char:

Mr. Chris Guay
(513) 652-6597, guay.cb@gmail.com

PALS is comprised of four voting regulatory officials (one from each region) and four voting members from industry (retailers and manufacturers) in addition to its Chair and NIST Technical Advisor. Members of NCWM can participate in the PALS meetings by contacting Chair Guay. PALS work is being developed through monthly online meetings and at the NCWM meetings. PALS members are responsible for providing updates at their Regional Meetings. Chair Guay added PALS will be developing proposals and in addition providing guidance and recommendations on existing proposals as assigned by the NCWM L&R Committee. Chair Guay stressed the importance of having key federal agencies (FDA, FTC, and USDA) participating.

At the 2020 Interim Meeting, Chair Guay reported that PALS is continuing to draft a proposed regulation and accompanying “Best Practice” document regarding products sold via e-commerce. The focus of this document is to help provide more clarity on the information necessary for consumers to make informed product choices on-line and for consumers to confirm receipt of the products ordered. PALS currently believes certain information is better included in a regulation while other information is better provided as guidance or Best Practice document. The Subcommittee will work on development of this proposed regulation and proposed guidance in the spring of 2020 with a target to have a draft proposal prepared by the 2020 NCWM Annual meeting. Separately, PALS believes the text of “Recommended Best Practice” for quantity expressions is complete. Also, PALS is developing an illustrative appendix with graphics support being provided by the NCWM office.

PALS held a session at the beginning of the combined 2020 NCWM Annual and 2021 Interim Meeting to address items under development and to discuss a request for NCWM comment and the final rule issued by the Alcohol and Tobacco Tax and Trade Bureau (TTB).

PALS was asked it would be willing to support the dual U.S. customary/SI net quantity statement provisions contained in a Citizen’s Petition to FDA made by the North American Olive Oil Association. PALS reviewed the Olive Oil Association Petition as well as the specific request regarding net quantity labeling and determined that NCWM should not take a position on the petition.

PALS reviewed the TTB final rule regarding prescribed sizes for beer, wine and spirits, noting that TTB has elected to expand the number of prescribed sizes allowed for certain alcoholic beverages. It was noted that TTB provided clarification on labeling in both SI and U.S. customary units both made no specific labeling requirement changes.

PALS reviewed the framework for a proposed NIST Handbook 130 regulation regarding products sold through e-commerce. This regulation would focus on ensuring buyers have sufficient information to make an accurate product selection and value comparison at the time of purchase, while also ensuring the buyer can confirm the product purchased is the product they actually receive. PALS plans to make this proposal its priority for 2021.

PALS is planning to have the “Recommended Best Practice” Document for quantity related expressions appearing on a principal display panel and the proper declaration of net quantity completed by this summer. The document has been completed and the work continues on an illustrative appendix.

At the 2021 NCWM Annual Meeting, PALS reviewed a developing draft regulation pertaining to websites which offer products for sale through e-commerce, and to products which are sold and delivered as a result of an e-commerce purchases. At the Sunday work session, PALS received comments from those in attendance and they believed the next step is to forward this proposal to Regional Associations for a broader stakeholder review and comment. PALS plans to submit an e-commerce proposal to obtain comments at the 2021 Fall Regional Association Meetings.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Laws and Regulations Committee rather than the NCWM Laws and Regulations Committee.)

At the WWMA and SWMA 2019 and 2020 Annual Meetings there were no comments heard.

At the NEWMA 2020 Interim Meeting there were no comments heard.

CWMA 2020 Interim Meeting, PALS Chair Guay indicated that the PALS had not met for a few months due to the COVID-19 pandemic but planned to reconvene in November 2020. There were no comments heard at the 2021 CWMA Annual Meeting.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to **www.nist.gov/pml/weights-and-measures/publications/newm-annual-reports** to review these documents.

Mr. Ethan Bogren, Westchester County, New York | 2020 Committee Chair
Mr. John McGuire, New Jersey | 2020 Member & 2021 Committee Chair
Mr. Mauricio Mejia, Florida | 2020 - 2021 Member
Mr. Doug Rathbun, Illinois | 2020 - 2021 Member
Mr. Tim Elliott, Washington | 2020 - 2021 Member
Mr. Tory Brewer, West Virginia | 2021 Member
Mr. Prentiss Searles, American Petroleum Institute | AMC Representative
Mr. Lance Robertson, Measurement Canada | Canadian Technical Advisor
Ms. Lisa Warfield, NIST OWM | Technical Advisor
Mr. David Sefcik, NIST OWM | Technical Advisor

Laws and Regulations Committee

APPENDIX A

NIST OWM WHITE PAPER – VERIFYING THE NET QUANTITY OF CONTENTS OF MULTIUNIT AND VARIETY PACKAGES

This proposal is to add test procedures for multiunit and variety packages in NIST Handbook 133 “Checking the Net Contents of Packaged Goods” (NIST HB 133)¹. This will also add guidance on applying the average requirement and the individual package requirements (i.e., MAV or Maximum Allowable Variations) to multiunit and variety packages.

When the current test procedures in NIST HB 133 are used and an MAV is applied to the total quantity declaration on some multiunit and variety packages the MAV allowed for the individual inner packages can indirectly be reduced as much as 50 % or more, depending on the number of individual items in the package. This can occur when a packer fills multiple individual inner packages to comply with the MAV for the net contents and produces several packaging sizes (e.g., count 6, 12, 24, or 48) into a multiunit package and specifies a total quantity declaration on the label. Typically, the MAV allowed for the total quantity declaration is less than the sum of the MAVs allowed for the individual inner packages. A packer may be required increase package fill levels or reduce the variations in the individual inner packages to ensure that the variation in the total quantity declarations remains within the limit of the MAV.

The reduction of the MAV occurs most often when the fixed MAV values located in NIST Handbook 133, Appendix A. are used. No reduction of the MAV occurs when the MAV’s used with the total quantity declarations on multiunit and variety packages are based on a percentage of the labeled quantity (e.g., packages with a net weight greater than 4.53 kg that are subject to U.S. Department of Agriculture (USDA) requirements; packages sold by net weight greater than 24.67 kg; packages sold by liquid or dry volume greater than 26.73 L; packages sold by count of 1334 or greater; some packages labeled by length, width [or area]; and packages of polyethylene sheeting and film, mulch, textiles, firewood and animal bedding.)

When a total quantity declaration on a multiunit or variety package is verified the proposed amendments will require the inspector, except when the MAV is based on a percentage of the labeled quantity, to calculate and use a “Total Quantity MAV.” This calculation will determine if minus package errors for total quantity declarations are unreasonable (an unreasonable error is a minus package error that exceeds an MAV specified in the NIST HB 133, Appendix A. MAV “Tables”). A “Total Quantity MAV” is calculated by multiplying the number of individual inner packages by the MAV value, which is based on the declared quantity of the individual inner packages. It is found by looking up the MAV for the individual inner package quantity and then calculating the “Total Quantity MAV” as follows:

$$\text{Total Quantity MAV} = \text{Number of Individual Inner Packages} \times \text{MAV for Individual Inner Package Quantity}$$

The Office of Weights and Measures (OWM) recommends adding this corrective step to NIST HB 133 to ensure that reasonable variations in package fill are allowed and to avoid imposing a reduced (unreasonable) MAV to total quantity declarations. OWM has also developed test procedures for use with any multiunit or variety package. The first test procedure is for use with package which do not have a total quantity declaration, a second procedure is for use with multiunit packages with total quantity declarations.

¹ The latest edition of NIST Handbook 133 is available at: <https://doi.org/10.6028/NIST.HB.133-2018>

In addition, a language edit will be required in the Uniform Packaging and Labeling Regulation (UPLR) in NIST HB 130 “Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality”². for Section 2.8. Multiunit Packages to eliminate conflicts between the UPLR and Federal Trade Commission (FTC) regulation for multiunit packages cited in 16 CFR Part 500.27.

2.8. Multiunit Package – A package containing two or more individual packages of the same commodity, in the same quantity, intended to be sold as a multiunit package ~~but where the component packages are labeled individually in full compliance with all requirements of this regulation~~.

OWM proposes six amendments to the current edition of NIST HB 133:

Amendment 1:

Revise the definition for 2.8. “Multiunit Package.” from the NIST Handbook 130, Uniform Packaging and Labeling Regulation. Place the definitions for Multiunit Package and Variety Package into NIST HB 133, Appendix F. “Glossary”:

2.8. Multiunit Package. - A package containing two or more individual packages of the same commodity, in the same quantity, intended to be sold as a multiunit package., ~~but where the component packages are labeled individually in full compliance with all requirements of this regulation.~~

2.10. Variety Package. – A package intended for retail sale, containing two or more individual packages or units of similar, but not identical, commodities. Commodities that are generically the same, but that differ in weight, measure, volume, appearance, or quality, are considered similar, but not identical.

Amendment 2:

Add a new definition for “Total Quantity MAV” to NIST HB 133, Appendix F. “Glossary”:

Total Quantity MAV. – **A calculated value used to determine if each minus Total Quantity Package Error found in multiunit and variety packages are unreasonable. A Total Quantity MAV is based on the declared quantity and count of the individual inner packages. It is determined by looking up MAV for the individual inner package quantity (See appropriate table of MAVs in Appendix A “Tables” of NIST HB 133) and then calculating the “Total Quantity MAV” as follows:**

Total Quantity MAV = Number of Individual Inner Packages × MAV for Individual Inner Package Quantity

NOTE: A Total Quantity MAV is not used when the MAV to be applied is based on a percentage of the labeled quantity on a multiunit or variety package.

NOTE: The Total Quantity Package Error is the sum of the errors found in the individual inner packages.

Total Quantity Package Error = Sum of Individual Inner Package Errors

Amendment 3:

Add a subsection 1.2.4.1, “Total Quantity MAV for Multiunit and Variety Packages” Chapter 1. “General Information” in NIST HB 133:

² The latest edition of this NIST Handbook is available at: <https://doi.org/10.6028/NIST.HB.130-2018>

1.2.4. Maximum Allowable Variation

The limit of the “reasonable minus variation” for an under filled package is called a “Maximum Allowable Variation” (MAV). An MAV is a deviation from the labeled weight, measure, or count of an individual package beyond which the deficiency is considered an unreasonable minus error. Each sampling plan limits the number of negative package errors permitted to be greater than the MAV. Packages are offered for sale individually or in multiunit packages which may contain two or more individual inner packages. When the individual packages are tested the MAV is applied to each package in the sample which has a minus package error. When a total quantity declaration on a multiunit or variety package is verified, and the MAV is not determined in terms of a percent of the labeled quantity, a “Total Quantity MAV” is compared to the minus Total Quantity Package Error(s) to determine if they are unreasonable.

Note: The Total Quantity Package Error is the sum of the errors found in the individual inner packages.

Total Quantity Package Error = Sum of Individual Inner Package Errors

1.2.4.1. Total Quantity MAV for Multiunit and Variety Packages (See also Chapter 5. “Specialized Test Procedures”)

- a. Multiunit Package. – When a Regarding the total quantity declaration that appears on a multiunit package, compare a the Total Quantity MAV to each minus Total Quantity Package Error to determine if the error is unreasonable. Calculate the Total Quantity MAV using the following formula:

Total Quantity MAV = Number of Individual Inner Packages × MAV for Individual Inner Package Quantity

Terms are defined as:

Number of Individual Inner Packages. – The total number of of individual inner packages having a uniform labeled weight, measure and/or count.

MAV for Individual Inner Package Quantity. – The MAV for the labeled quantity declared for the individual inner packages specified in the proper table of MAVs in Appendix A. “Tables.”

- b. Variety Package. – When a Regarding the total quantity declaration that appears in on a variety package, compare a Total Quantity MAV to each minus Total Quantity Package Error to determine if the error is unreasonable.

Calculate the Total Quantity MAV using the following formula:

Total Quantity MAV = Number of Individual Inner Packages × The sum of the applicable MAV for all Individual Inner Packages Quantity

Variety packages typically include several different types of similar products with various net quantity declarations. While the commodities may be generically similar, they can differ in weight, measure, volume, or appearance. For these packages a Total Quantity MAV is calculated for each product type and the results are added to obtain a Total Quantity MAV for comparison to each minus Total Quantity Package Error.

Terms are defined as:

Number of Individual Inner Packages. – The total number of similar but not identical individual inner packages with differing and/or uniform labeled weight or measure.

MAV for Individual Inner Package Quantity. – The MAV for the quantity declared for the individual inner packages specified in the proper Table of MAVs in Appendix A. “Tables.”

Amendment 4:

Add a Chapter 5. “Specialized Test Procedures” to NIST HB 133 to give specific test procedures for these types of packages.

5.1. Scope

The following procedures are for use in verifying the net quantity of contents of multiunit packages with individual inner packages that have the same commodity and identical quantities and variety packages with individual inner packages that differ in weight, measure or volume. The procedure used is determined by the package label. If a total net quantity of contents is not declared on the package label, use Section 5.2. Individual Package Quantity. If a total net quantity of contents is declared on the package, use Section 5.3. Total Quantity. If the packages are labeled with other or additional quantities (i.e., dry volume, area, length, width, or thickness) added steps or, when proper, additional Total Quantity MAVs may be required.

5.2. Individual Package Quantity

This procedure is used to test open or transparent multiunit packages with no total net quantity declaration on the package label. For these packages the net quantity is visible on each individual inner package and they are identical (See Figure 1. Multiunit Package with Individual Quantity Declarations [which contains two rows of packages]).

Figure 1. Multiunit Package with Individual Quantity Declarations (which contains two rows of packages)

Cereal	Cereal	Cereal	Cereal	Cereal
Net Wt 100 g	Net Wt 100 g	Net Wt 100 g	Net Wt 100 g	Net Wt 100 g

5.2.1. Test Procedure

- 1. Follow Section 2.3.1. “Define the Inspection Lot” which is the total number of individual inner packages in the multiunit packages (e.g., if there are 120 packages and each contains 12 individual inner packages the Inspection Lot size is 1440). Use this number with Category A or Category B. to find the sample size (See Section 2.3.2. “Select Sampling Plans”). Select a random sample (See Section 2.3.4. “Random Sample Selection”).**
- 2. At least two of the individual inner packages are opened to determine an average tare weight (See Section 2.3.5. “Procedures for Determining Tare”). The Average Tare Weight is added to the labeled quantity to obtain a Nominal Gross Weight (See Section 2.3.6. “Determine Nominal Gross Weight and Package Errors”) which is used to determine package errors.**
- 3. The net quantity of each individual inner package in the sample is determined. If a count declaration appears on the multiunit packages it should be verified (See Section 4.2. “Packages Labeled by Count”) and the appropriate MAV for the count from Table 2-7. MAV for Packages Labeled by Count applied.**

4. If minus package errors are found in the sample, the value of the MAV to be applied is determined by looking up the quantity for the individual inner packages (See Appendix A “Tables”). The MAV for the labeled quantity is compared to the minus package errors in the individual inner packages to determine if any are unreasonable (See Section 2.3.7.1. “MAV Requirement”). If the number of unreasonable errors exceeds the amount allowed for the sample size (See Appendix A, Tables 2-1 or 2-2, Column 4) the sample fails. If the sample passes go to Step 5.
5. Apply Section 2.3.7.2. “Average Requirement.” The sample passes or fails depending on the results of the evaluation conducted according to Section 2.3.7. “Evaluation for Compliance.”

5.3. Total Quantity

Use this procedure to test multiunit packages with a count and/or total net quantity declaration. This procedure can be used to verify the total net quantity declared on open or closed multiunit packages or multiunit packages with transparent or opaque packaging. If the quantities of the individual inner packages vary (which is allowed in Variety Packages) or, if the quantity of the individual inner packages is not declared, see Section 5.4. Exceptions.

Test Procedure

1. Follow Section 2.3.1. “Define the Inspection Lot” which is the number of multiunit packages. Use this number with Category A or Category B. to find the sample size (See Section 2.3.2. “Select Sampling Plans”). Select a random sample (See Section 2.3.4. “Random Sample Selection”).
2. Determine the tare of at least two multiunit packages using Section 2.3.5. “Procedures for Determining Tare”. The average tare weight is added to the labeled quantity to obtain a nominal gross weight (See Section 2.3.6. “Determine Nominal Gross Weight and Package Error”). This is used to determine errors in the total package quantity declaration.
3. Determine the net quantity of each multiunit package and calculate the Total Quantity Package Error for each multiunit package.

NOTE: The Total Quantity Package Error is the sum of the errors found in the individual inner packages.

Total Quantity Package Error = Sum of Individual Inner Package Errors

If needed, verify the count declaration of the individual inner packages. For the MAV for count use Appendix A, Table 2-7. “MAV for Packages Labeled by Count”.

4. If minus package errors are found in the sample, look up and use the MAV for the individual inner package quantity. (See Section 1.2.4.1. “Total Quantity MAV for Multiunit and Variety Packages” and the appropriate MAVs in Appendix A “Tables”). Calculate the MAV to be applied to the total quantity of contents declaration as follows:

Total Quantity MAV = Number of Individual Inner Packages × MAV for Individual Inner Package Quantity

Note: A “Total Quantity MAV” is not required when the MAV to be applied is based on a percent of a labeled quantity of a multiunit or variety package.

5. The “Total Quantity MAV” is compared to the minus Total Quantity Package Errors to determine if any of the errors are unreasonable (See Section 2.3.7.1. “MAV Requirement”). If the number of unreasonable errors exceeds the amount allowed for the sample size the sample fails. (See Section

2.3.1. “Define the Inspection Lot” and Tables 2-1 or 2-2, Column 4). If the sample passes go to Step 6.

6. Apply Section 2.3.7.2. “Average Requirement.” The sample passes or fails depending on the results of the evaluation conducted according to Section 2.3.7. “Evaluation for Compliance.”

5.4. Exceptions

5.4.1. Multiunit Packages with Only a Total Quantity Declaration

In NIST HB 130, Uniform Packaging and Labeling Regulation (UPLR) Section 10.4. Multiunit Packages states unlabeled individual packages not intended for individual retail sale are only required to declare a total quantity declaration [See Figure 2. Multiunit Package (three packages) with only a Total Quantity Declaration]. Section 10.4. Multiunit Packages also permits multiunit packages to include an optional statement of the count of the individual inner packages even when the regulations do not require such a statement.

Figure 2. Multiunit Package (three packages) with only a Total Quantity Declaration

<u>Floor Cleaner</u>	<u>Floor Cleaner</u>	<u>Floor Cleaner</u>
	<u>NET WEIGHT 15 kg</u>	

5.4.1.1. MAV Application

When multiunit package labels do not include a quantity for the individual inner packages (e.g., only a total quantity appears) a Total Quantity MAV cannot be not applied because the quantities in the individual inner packages is unknown. In these cases, the MAV value for the total quantity declaration in the MAV tables (See Appendix A. Tables) is compared to the Total Quantity Package Error to determine if any of the errors are unreasonable (See Section 2.3.7.1. “MAV Requirement”).

5.4.2. Variety Packages: Non-Uniform Quantity Declarations

In NIST HB 130, “Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality.” In UPLR Section 10.6. Variety Packages it states a variety packages is required to have total quantity declaration. While the commodities may be generically similar, they can differ in weight, measure, volume, or appearance. When the quantity of the weight, measure or count varies the value of the MAV can also vary. When variety packages are tested the procedure used to calculate a Total Quantity MAV requires the summing of the MAV values over the number of inner packages of all types. An example label for a variety package of candy bars is shown in Figure 3. Variety Package – Four Similar but Different Products with Varying Net Weights, to illustrate a total quantity declaration, count, and the weight of the individual inner packages.

Figure 3. Variety Package – Four Similar but Different Products with Varying Net Weights

<u>30 Candy Bar – Variety Pack</u> <u>Total Net Weight 1.33 kg</u>	
<u>10 – 55 g Peanut Butter Cups</u>	<u>6 – 30 g Dark Chocolate Bars</u>

<u>6 – 46 g Milk Chocolate Bars with Almonds</u>	<u>8 – 41 g Milk Chocolate Bars</u>
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5.4.3. Test Procedure:

2. When this type of variety package is tested the average tare weight (e.g., packaging from the individual inner packages and the outer package combined) is determined and a nominal gross weight is used to determine the error in the total quantity declaration.

Note: The Total Quantity Package Error is the sum of the errors found in the individual inner packages.

Total Quantity Package Error = Sum of Individual Inner Package Errors

The MAV used to determine if any minus Total Quantity Package Errors are unreasonable is calculated. The MAVs selected are based on the labeled quantities on each product types and are calculated (i.e., the number of individual inner packages of each product type is multiplied by their count) and added together to obtain the Total Quantity MAV (See example shown in Table 1. Steps in Calculating a MAV for a Variety Package).

5.4.3.1. MAV Application:

A Total Quantity MAV must be applied because the quantities and MAVs of the individual inner packages vary. For example, based on the quantity of the total net weight the MAV for 1.33 kg is 42.6 g but the “Total Quantity MAV” to be applied is 122.4 g (See example shown reflected in Table 1. Steps in Calculating a MAV for a Variety Package).

Table 1. Steps in Calculating a MAV for a Variety Package (Based on Figure 3. Variety Package – Four Similar but Different Products with Varying Net Weights)

<u>Item</u>	<u>Product</u>	<u>Number in Package</u>	<u>Net Weight</u>	<u>MAV for Net Quantity</u>	<u>Total Quantity MAV</u>
<u>1</u>	<u>Peanut Butter Cups</u>	<u>10</u>	<u>55 g</u>	<u>5.4 g</u>	<u>10 × 5.4 = 54 g</u>
<u>2</u>	<u>Dark Chocolate Bars</u>	<u>6</u>	<u>30 g</u>	<u>10 % of labeled quantity</u>	<u>6 × (0.1 × 30) = 18 g</u>
<u>3</u>	<u>Milk Chocolate Bars</u>	<u>8</u>	<u>41 g</u>	<u>3.6 g</u>	<u>8 × 3.6 = 28.8 g</u>
<u>4</u>	<u>Milk Chocolate Bars with Almonds</u>	<u>6</u>	<u>46 g</u>	<u>3.6 g</u>	<u>6 × 3.6 = 21.6 g</u>
				<u>Total Quantity MAV</u>	<u>122.4 g</u>

Amendment 5:

Add a Note to HB133, Chapter 2, Section 2.1. “Scope;” Section 3.1. “Scope;” and Section 4.1. “Scope” that refers users to the Chapter 5. “Specialized Test Procedures” for these types of packages.

Note: If Multiunit or Variety Packages are to be inspected see Chapter 5. “Specialized Test Procedures” for guidance in testing these types of packages. If a total quantity declaration is to be verified, and the MAV to be applied is not based on a percentage of the labeled quantity, (See Section 1.2.4.1. Total Quantity MAV for Multiunit and Variety Packages.)

Amendment 6:

Add the following note to HB133, Chapter 2, Section 2.3.7.1 “Maximum Allowable Variation (MAV) Requirement” and Section 2.7.3. “Evaluation of Results – Compliance Determinations.”

Note: If a total quantity declaration on a multiunit or variety package is verified, and the MAV applied is not based on a percentage of the labeled quantity. (See Section 1.2.4.1. Total Quantity MAV for Multiunit and Variety Packages.)

Background

This memorandum provides information to support the proposals described above. It describes how to apply the average and individual (i.e., Maximum Allowable Variations) package requirements in NIST Handbook 133 (NIST HB 133)³ “Checking the Net Contents of Packaged Goods” to multiunit and variety packages. The handbook’s test procedures and statistical requirements allow reasonable variations in package fill as required under both Federal and State packaging and labeling laws. The average requirement ensures consumers receive properly filled packages and promotes, among other benefits, fair competition in the marketplace. The individual package requirement, or Maximum Allowable Variations (MAVs), are used to limit unreasonable minus package errors in a lot, shipment or delivery of packaged goods (See HB 133, Section 1.2. “Package Requirements”). An unreasonable error is a minus package error that exceeds an MAV specified in the proper table of MAVs in HB 133, Appendix A. “Tables.” The tables consist of MAVs for packages labeled by weight, measure (both liquid and dry volume, as well as products sold by length, width, and thickness) and count.

Many multiunit packages are labeled with a declaration of count (e.g., the number of individual inner packages in the package), the net quantity of the individual inner packages, and a total net quantity of contents (i.e., the sum of the declared net quantities of the individual inner packages). Other multiunit packages are labeled with a net quantity of contents declaration that are sold in open or transparent packaging are not required to bear count or total quantity declarations. The labeling requirements and exemptions for multiunit and variety packages are found in NIST Handbook 130 (NIST HB 130) “Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality”⁴, Section 10.4. “Multiunit Packages” and Section 10.6. “Variety Packages”.

There are no separate test procedures for multiunit and variety packages in NIST HB 133 just test procedures for determining the net quantity of contents of packaged goods sold by weight, measure or count. As a result, weights and measures inspectors apply several different procedures when testing these packages. A state weights and measures official requested guidance from the OWM on applying the MAVs to multiunit packages. An official questioned how the MAVs was to be applied to total quantity declaration. The official presented information illustrating that applying an MAV to the total quantity declaration can indirectly reduce the MAV for the individual inner packages. It is important to note the reduction of the MAV occurs when the fixed values for the NIST HB 133 MAVs tables are used. No reduction of the MAV occurs when the MAV’s are used with the total quantity declarations on multiunit and

³ The latest Edition of this NIST Handbook is available at: <https://doi.org/10.6028/NIST.HB.133-2018>

⁴ The latest Edition of this NIST Handbook is available at: <https://doi.org/10.6028/NIST.HB.130-2018>

variety packages are based on a percentage of the labeled quantity (e.g., packages sold by net weight with a quantity less than 36 g (1.26 oz); packages sold by weight with a quantity less than 85 g (3 oz) that are subject to U.S. Department of Agriculture regulation; packages labeled by length, width, and area; polyethylene sheeting and film; mulch; and animal bedding.)

We are proposing test procedures for the use with multiunit and variety packages and providing an alternative approach for applying an MAV to total quantity declarations. The solution for applying an MAV to the total quantity declaration recommended below will result in a large allowable variation but it provides a reasonable and practical solution to the problem that results using the current test method. While the individual package requirement is important, packers cannot take advantage of the MAV values without increasing the risk that a lot, shipment or delivery of packages will fail the average requirement which provides the most important protection for consumers and fair competition.

Variations in the Labeling Requirements for Multiunit Packages Call for Different Test Procedures

Most packers fill multiunit packages by producing individual inner packages with a specific net quantity of contents and assemble them into a master package, applying a total quantity declaration to most packages. The individual inner packages are filled on packaging machines programmed to control fill quantities to ensure lots, shipments, and deliveries meet the package requirements in NIST HB 133. Multiunit packaging allows packers to produce the individual inner packages in large numbers and assembles them in packages with a wide range of unit counts and configurations to fill marketplace demands. Many individual inner packages filled on the same production line are labeled for individual retail sale, so they can be removed from the multiunit package for display and individual sale. Packers use a variety of means to check total quantity declarations in multiunit packages, some packers calculate total package quantities and rely on the individual inner package fill to ensure compliance with the average and individual package requirements in NIST HB 133.

Some multiunit packages are labeled with a declaration of count, the net quantity of the individual inner packages, and a total net quantity of contents (i.e., the sum of the labeled net quantity of the individual inner packages). Multiunit packages of food sold in open (transparent) packaging are not required to have declarations of count and total net quantity of content declarations. Because of these labeling variations, different test procedures must be used to verify the net quantity of contents of multiunit packages. The following examples reflect the most common test procedures in use. The examples provide for a sample size of 12 multiunit packages from an inspection lot of 230 multiunit packages. Each multiunit package has ten – 100 gram individual inner packages (the total quantity in each multiunit package is 1, 000 g or 1 kg) and the sample includes a total of 120 individual inner packages.

One procedure is used to test multiunit packages that do not bear a count or a total net quantity declaration on the label (see Note 7 in Section 10.4. “Multiunit Packages” of the UPLR in Appendix A in this document) the same way they would be tested if they were simply individual packages offered for sale on a store shelf. In the multiunit package in Figure 1. “Multiunit Package with Individual Quantity Declarations” each individual inner package is labeled with a net quantity of contents statement of 100 g and that statement is visible to consumers. This type of multiunit package could also include for example an open six-pack carton of bottles of soda.

Figure 1. Multiunit Package with Individual Quantity Declarations (contains two rows of packages)

Cereal	Cereal	Cereal	Cereal	Cereal
Net Wt 100 g	Net Wt 100 g	Net Wt 100 g	Net Wt 100 g	Net Wt 100 g

The procedure to test these multiunit packages is to select a random sample of 12 (See NIST HB 133, Appendix A. Table 2-1.) from the inspection lot of 120 multiunit packages. The individual inner packages are taken as a tare sample (i.e., two are typically required by the sampling plan). The average tare weight is added to the declared net quantity on the individual inner package to obtain a nominal gross weight. The nominal gross weight is subtracted from the

gross weight of each of the sample individual inner packages to find errors in the quantity declarations. If there are negative errors, the MAV for the quantity shown on the individual inner packages is applied to decide if there are any unreasonable errors (See NIST HB 133, Appendix A “Table 2-5. “MAVs for Packages Labeled by Net Weight”, the MAV for a 100 g is 7.2 g). If the count of unreasonable errors exceeds the number allowed by the sampling plan, the sample fails. If there are no unreasonable errors in the sample, the average requirement is applied, and the sample passes or fails based on the evaluation criteria detailed in NIST HB 133, Section 2.3.7. “Evaluate for Compliance”

A similar approach is used to test multiunit packages that are required to have count, individual inner package net quantity and total net quantity declarations on their labels, except the MAV is applied to the multiunit packages rather than the individual inner package. A multiunit package that is closed or is wrapped in opaque packaging is required by NIST HB 130, Section 10.4. “Multiunit Packages” (see Appendix A in this document) to have the information on the Principal Display Panel (PDP) as shown in the example in Figure 2. Multiunit Package with Count, Individual and Total Quantity Declarations. This procedure is also often used to test multiunit packages that are open or in transparent wrapping which include count, individual inner package net quantity, and total net quantity declarations on their labels.

Figure 2. Multiunit Package with Count, Individual and Total Quantity Declarations

Soap Bars
10 – 100 g BARS – TOTAL NET WEIGHT 1 kg



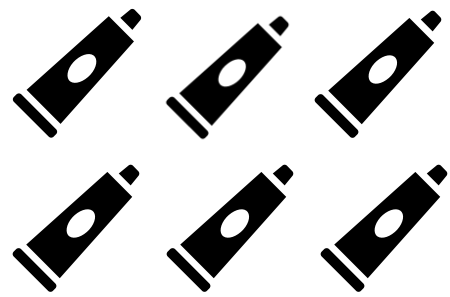
This test is typically used to only verify the total net quantity declaration. The count on all the multiunit packages and declared quantity of individual inner packages is not verified, because only two multiunit packages are opened for determination of an average tare weight to reduce destructive testing. The two multiunit packages are opened, and tare is taken to determine the average tare weight. The average tare weight is added to the total declared net quantity to obtain a nominal gross weight (NGW). The NGW is subtracted from the measured gross weight of the sample multiunit packages to obtain the errors in total net quantity declarations of each multiunit package in the sample. To determine if the sample passes or fails, the errors in the total net quantity declarations are averaged. If there are minus package errors, the MAV for the total net quantity declaration on the multiunit package is applied to determine if there is an unreasonable package error (In NIST HB 133, Appendix A. Table 2-5. “Maximum Allowable Variations (MAVs) for Packages Labeled by Weight” an MAV of 35.3 g is applied to a 1 kg package). If there are no unreasonable errors in the sample, the average requirement is checked, and the sample passes or fails based on the procedures in NIST HB133, Section 2.3.7. “Evaluate for Compliance”.

There are no specific test procedures for multiunit and variety packages in NIST HB 133. Inspectors may also use a variety of other test procedures for these packages. If a customer complains about a shortage in count an inspector will open all the multiunit packages in a sample to verify count. OWM is aware of other examples of test procedures such as; an inspector will open all the multiunit packages in a sample; verify the net quantity of the individual inner packages, and then use the sum of the errors found with the individual inner packages to calculate the error for each multiunit package. This latter approach is used if they are investigating a complaint about the weight of an individual inner packages labeled for retail sale and the inspector finds the packages were in a multiunit package in a store where they were removed and placed on a store shelf for individual sale. Another test procedure in occasional use is an inspector treats the total number of individual inner packages in the multiunit packages as an inspection lot. The inspector randomly selects a sample of multiunit packages and then opens them and takes another sample of the individual inner packages to use to find if the sample multiunit packages pass or fail the package requirements. When this procedure is used, the total quantity declaration on the multiunit packages are usually not verified.

How Different Test Procedures and Packaging Indirectly Reduce the MAV

In the first test procedure, where the net weights of the individual inner packages were tested separately an MAV of 7.2 g was applied. In the second test procedure, an MAV of 35.3 g was applied where the total net weights of the multiunit packages were measured. The approach using this test procedure effectively requires the packer to distribute the 35.3 g MAV over the individual inner packages so each package would be allowed an MAV of only 3.53 g instead of 7.2 g. Packers use the adjustments on their production lines to control the fill accuracy of the individual inner packages so the total quantity declaration on multiunit packages follow the average and individual package

requirements in NIST HB 133. As the MAV for an individual inner package decreases the packer, may either reduce that variability or increase package fill to ensure compliance. This can increase packaging costs and could result in product price increases. In this example, there is the potential for a more than 50 % reduction in the MAV for the same amount of a product solely due to the packaging used to place the product on the shelf in a retail store. In addition, the MAV changes depending on how the individual packages are assembled into multiunit packages. As the count of individual inner packages in the multiunit package increases, the MAV that the packer can use or distribute over the individual inner packages is reduced as shown in table below.

Multiunit Package Count and MAVs for Net Weight				
	Net Weight	MAV for Net Weight ^(a)		This value shows the proportion the Distributed MAV is of the MAV for the Individual Inner Package <i>Distributed MAV/7.2 × 100 %</i>
The Individual Inner Package	100 g	7.2 g		
Number of Units in a Multiunit Package	Total Net Weight	MAV for Total Net Weight ^(a)	Distributed MAV <i>Distributed MAV = MAV for Total Net Weight/Number of Packages</i>	
6	600 g	23.5 g	3.91 g	54.30 %
10	1 000 g	35.3 g	3.53 g	49.02 %
12	1 200 g	39.0 g	3.25 g	45.13 %
24	2 400 g	63 g	2.62 g	36.45 %
48	4 800 g	99 g	2.06 g	28.61 %
The illustration below reflects how the 7.2 g MAV allowed for a single 100 g item is reduced by packaging several items in a multiunit package.				
MAV for a Single Individual Inner Package 100 g = 7.2 g ^(a)			Total Net Weight MAV Distributed over the Individual Inner Packages in a Multiunit Package of Six Items Total Net Wt: 600 g = MAV of 23.5 g ^(a) /6 = 3.91 g per Item	
				
(a) See Table 2-5. “MAVs for Packages Labeled by Weight” in Appendix A. “Tables” in NIST HB 133.				

While the application of the MAVs described in both examples are in full compliance with existing NIST HB 133 test procedures, the indirect reduction of the MAV that results when the MAV is applied to the total quantity declaration on a multiunit package is problematic. When the testing procedures in NIST HB 133 were developed in the 1970s there was no intent to have the value of an MAV indirectly affected by different packaging methods. Any reduction of an MAV for individual inner packages in a multiunit package should be based on data on the package variations taken in production plants and from official weights and measures inspections conducted in the field. This allows for the recognition of the measurement accuracy and variability of packaging machines and other factors that occur in current good manufacturing practice. NIST HB 133 enables inspectors to recognize reasonable variations in package fill allowed under both federal and state laws and regulations and, to meet the requirements in NIST HB 130, Uniform Packaging and Labeling Regulations, Section 12.1.1. “Variations from Declared Net Quantity,” which states “variations from the declared net weight, measure or count shall be permitted when caused by unavoidable deviations in weighing, measuring or counting the contents of individual packages that occur in current good manufacturing practice....”

As explained above, the OWM found no documentation in the history of the MAVs and NIST HB 133 of any intent to indirectly reduce the MAV value on individual inner packages assembled in multiunit packages. The data used to establish the MAVs focused on the errors and variations found in individual packages where packagers control quantities using filling machines. While the data included errors found in some individual inner packages from multiunit packages (e.g., a 6-pack of soda), errors for the total quantity declarations found on multiunit packages were not considered. Packaging products in multiunit packages for retail sale may be an option, that could be discontinued at a manufacturer’s discretion, but the reduction of the MAV described above also occurs in the current inspection procedures for non-consumer packages that are relied on in wholesale transactions where multiunit packaging is required by definition. Based on the information presented the OWM finds that (1) it is unreasonable to apply a reduced MAV (i.e., no consideration of the MAV for the individual inner packages) to the total quantity declaration on multiunit and variety packages; and (2) there is a need for guidance on testing multiunit and variety packages and for the use of a “Total Quantity MAV” for use with total quantity declarations, on packages containing individual inner packages. OWM is recommending test methods for use with multiunit and variety packages as well as a procedure for calculating a “Total Quantity MAV.”

“Total Quantity MAV”

To ensure reasonable variations are allowed in package filling operations, OWM is recommending that the total quantity declaration on multiunit be verified the use of a “Total Quantity MAV” be applied. The “Total Quantity MAV” is based on the value of the MAVs for the individual inner package quantity and is applied to negative package errors found in the total declared quantity of multiunit packages. A “Total Quantity MAV” can only be applied when the quantities of the individual inner packages are declared. For “Variety Packages,” in which the quantities of the individual inner packages vary such that the MAVs differ, added calculations are necessary and are described in Section 5.4. “Exceptions.” If the quantity of the individual inner package quantity is not declared, which is allowed under an exception in the UPLR, inspectors must apply the MAV for the total declared quantity found in NIST HB 133, Appendix A “Tables.” A “Total Quantity MAV” is defined as the value of the MAV to be applied to each minus Total Quantity Package Error (the sum of the errors found in the individual inner packages) found when verifying the total quantity declarations on multiunit packages. This is determined by obtaining the MAV for the individual inner package quantity and then calculating the “Total Quantity MAV” as follows:

$$\text{Total Quantity MAV} = \text{Number of Individual Inner Packages} \times \text{MAV for Individual Inner Package Quantity}$$

Examples of a “Total Quantity MAV” Used to Verify Total Quantity of Contents Declarations

The examples are based on the test procedures recommended in Section 5.3. “Total Quantity Test Procedure.” In these examples it is the total net contents declaration that is being verified using a gravimetric test procedure. The MAVs for count and individual package quantities are provided because action can be taken on these if unreasonable errors are found in the packages opened for use in tare determination.

Example 1: Multiunit Package of Cereal Packed in 100 g Boxes: This example is based on the Total Quantity Test Procedure shown above in Section 5.3. Only two multiunit packages are opened for a tare determination, so only the

total net weight declaration is verified. Package count and the net weights of individual inner packages are not verified to minimize destructive testing and verifying these values would require the opening of all of the packages.

MAV values for the count and individual package quantities are shown in Table “Example 1, Assorted Cereals” to explain how a “Total Quantity MAV” is calculated. A sample of twelve- 24 count multiunit package of 100 g cereal packages is used to show a test for multiunit packages and to explain how a “Total Quantity MAV” is calculated.

In Step 5, the Total Net Weight of the multiunit package is 2.4 kg which is allowed an MAV of 63 g. If a 63 g MAV is applied, a packer would probably need to apply a 2.62 g MAV (i.e., $63 \div 24 = 2.62$) to the individual inner packages not, the 7.2 g allowed in Row 4. To avoid this a “Total Quantity MAV” is used and an MAV of 172.8 g, not 63 g, is compared to each Total Quantity Package Error.

Table: Example 1			
ASSORTED CEREALS			
24 – 100 g (3.5 OZ) PACKAGES - TOTAL NET WT 2.4 kg (5.25 LB)			
	Test Step	Instruction or NIST HB 133 Reference	
1.	a. Define the Inspection Lot (it is the number of multiunit packages available for inspection).	Section 2.3.1. “Define the Inspection Lot”	
	b. Use this number with the proper sampling plan to find the proper sample size.	See Section 2.3.2. “Select Sampling Plans” and also Table 2-1. “Sampling Plans for Category A” or Table 2-2. “Sampling Plans for Category B.”	
	c. Select a random sample.	See Section 2.3.4. “Random Sample Selection.”	
2.	a. Obtain and record the gross weight of the sample packages.	See Section 2.3.3. “Record Inspection Data.”	
	b. Open 2 packages (i.e., the outer and individual inner packages) to obtain the “Average Tare Weight” and calculate a “Nominal Gross Weight.”	See also Sections 2.3.5. “Procedures of Determining Tare.” and 2.3.6. “Determine Nominal Gross Weight and Package Error.”	
	c. Use the NGW to determine the errors in the sample packages.		
3.	The count the of individual inner packages in the sample packages is not determined. If this quantity were verified, each minus package count would be compared to an MAV of:	The MAV for a 24 Count Package is: 1	Table 2-7 “MAVs for Packages Labeled by Count”
4.	The average net weight of the individual inner packages is not determined. If this quantity were verified minus each package errors would be compared to an MAV of:	For a 100 g Individual Inner Package the MAV of 7.2 g is applied.	Table 2-5 “MAVs for Packages Labeled by Weight”

5.	The Total Net Weight of 2.4 kg* is verified. A “Total Quantity MAV” is applied:	A “Total Quantity MAV” is calculated and applied: $24 \times 7.2 \text{ g} = 172.8 \text{ g}$	
6.	The “Total Quantity MAV” is compared to the each minus Total Quantity Package Error to find if any are unreasonable. If the number of unreasonable errors exceed the number allowed for the sample size the sample fails.	Section 2.3.7.1. “MAV Requirement” and Column 4 of Tables 2-1 or 2-2 as appropriate.	
	If the sample does not fail on MAVs the Average Requirement is checked and the sample passes or fails based on the evaluation conducted per Section 2.3.7.	Section 2.3.7.2. “Average Requirement” and Section 2.3.7. “Evaluation for Compliance.”	

Example 2: Multiunit Package of Lemonade in 355 mL Cans:

A test of multiunit packages of twelve cans of lemonade is shown below in Table: “Example 2. Lemonade.” This example, is based on Section 5.3. “Total Quantity.” Only the total net contents declaration is verified. In addition, if the count is verified the MAV for the labeled count in HB133, Appendix A. Table 2-7 “MAVs for Packages Labeled by Count”⁵ is compared to negative package errors (See Row 1). If the net contents of the individual inner packages of 355 mL is verified each is allowed an MAV of 14.7 mL from HB 133, Appendix A. Table 2-6 “MAV’s for Packages Labeled by Liquid or Dry Volume”³ (See Row 2).

The MAV is included to illustrate how a “Total Quantity MAV” is calculated for liquid commodities. In Row 5 the Total Net Contents of 4.26 L is allowed an MAV of 73 mL in HB133, Appendix A, Table 2-6 “MAV’s for Packages Labeled by Liquid or Dry Volume.”³ If a 73 mL MAV is applied to the total net contents declaration a packer would possibly need to apply a 6.08 mL MAV (i.e., $73 \div 12 = 6.08$) to the individual inner packages in the filling process not a 14.7 mL.

In Row 6 a Total Quantity MAV is calculated for use in verifying the total net contents declaration. For this 4.2 L package the Total Quantity MAV is calculated by multiplying the package count of $12 \times 14.7 \text{ mL}$ (MAV for the individual inner packages) = 176.4 mL (see Row 6). The Total Quantity MAV of 176.4 mL (not 73 mL) would be compared to minus package errors to determine if they are unreasonable.

⁵ See Appendix A. “Tables” in NIST HB 133

Table: Example 2.

LEMONADE

12 – 355 mL CANS – TOTAL NET CONTENTS 4.26 L

	Test Step	Instruction or NIST HB 133 Reference	
1.	a. Define the Inspection Lot (it is the number of multiunit packages available for inspection).	Section 2.3.1. “Define the Inspection Lot”	
	b. Use this number with the proper sampling plan to find the proper sample size.	See Section 2.3.2. “Select Sampling Plans” and also Table 2-1. “Sampling Plans for Category A” or Table 2-2. “Sampling Plans for Category B.”	
	c. Select a random sample.	See Section 2.3.4. “Random Sample Selection.”	
2.	a. Verify that the temperature of the product in the sample packages is stabilized at the “Reference Temperature” and then determine the average product density.	See Section 3.1.1. “Test Method” and Section 3.2.2. “Test Procedure.”	
3.	a. Obtain and record the gross weight of the sample packages.	See Section 2.3.3. “Record Inspection Data.”	
	b. Open 2 packages (i.e., the outer and individual inner packages) to obtain the “Average Tare Weight” and calculate a “Nominal Gross Weight.”	See also Sections 2.3.5. “Procedures of Determining Tare” and Section 3.2.2. “Test Procedure.”	
	c. Use the NGW to determine the errors in the sample packages.	2.3.6. “Determine Nominal Gross Weight and Package Error.”	
4.	The count the of individual inner packages in the sample packages is not determined. If this quantity were verified, the minus count would be compared to an MAV of:	The MAV for a 12 Count Package is: 0	Table 2-7 “MAVs for Packages Labeled by Count”
5.	When the average net contents of the individual inner packages are not determined. If this quantity were verified, the minus package errors would be compared to an MAV of:	For a 355 mL Individual Inner Package the MAV of 14.7 mL is applied.	Table 2-6 “MAVs for Packages Labeled by Liquid and Dry Volume”

6.	The Total Net Contents of 4.26 L* is verified. A “Total Quantity MAV” is applied:	For these packages a “Total Quantity MAV” was calculated as follows: $12 \times 14.7 \text{ mL} = 176.4 \text{ mL}$	
7.	The “Total Quantity MAV” is compared to each minus Total Quantity Package Error to find if any are unreasonable. If the unreasonable errors exceed the number amount allowed for the sample size the sample fails.	Section 2.3.7.1. “MAV Requirement” and Column 4 of Tables 2-1 or 2-2 as proper.	
	If the sample does not fail on MAVs the Average Requirement is applied and the sample passes or fails based on the evaluation conducted per Section 2.3.7.	Section 2.3.7.2. “Average Requirement” and Section 2.3.7. “Evaluation for Compliance.”	

Interim Recommendation

Since the NCWM will not consider these proposals until 2019 or later the NIST Office of Weights and Measures recommends that the individual and total quantity package inspection procedures, including the “Total Quantity MAV” described above for use by federal, state and local officials who use NIST HB 133 to verify the net quantity of contents of multiunit and variety packages. While the “Variety Package” requirements in the UPLR do not apply to foods or other commodities subject to the Federal Food, Drug, and Cosmetic Act (21 USC) (and meat and poultry products subject to regulation by the U.S. Department of Agriculture’s Food Safety and Inspection Service), the NIST HB 133 test procedures do apply to these packages, so the Total Quantity MAV should be applied to these packages as well. Utilizing the procedures will help weights and measures officials avoid the possibility that unreasonable Maximum Allowable Variations will be applied to packaged foods and other commodities.

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Specifications and Tolerances (S&T) Committee 2020 - 2021 Final Report

Mr. Loren Minnich, 2020 Committee Chair
Kansas

Mr. Josh Nelson, 2021 Committee Chair
Oregon

INTRODUCTION

This is the final report of the Committee on Specifications and Tolerances (S&T) (hereinafter referred to as the “Committee”) for the 105th and 106th Annual Meetings of the National Conference on Weights and Measures (NCWM).

NCWM convened the 105th Annual Meeting in July 2020, then adjourned to January 10, 2021, due to the lack of a quorum. On January 10-12, 2021, the NCWM reconvened the 105th Annual Meeting and held virtual voting on the 2020 Agenda Items. This was followed by the 2021 Interim Meeting conducted January 13-15, 2021.

Robert’s Rules of Order allow virtual voting, provided that NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the NCWM Bylaws at that time and Robert’s Rules of Order, items approved by a virtual vote are effective upon ratification at the next in-person opportunity. The 106th NCWM Annual Meeting was held July 19-22, 2021. NCWM obtained a court order allowing for virtual voting at the 106th Annual Meeting to ratify the decisions of the 105th Annual Meeting, including a bylaw amendment allowing for official virtual voting for the agenda items of the 106th Annual Meeting.

This final report contains the proceedings from both the 2020 and 2021 Annual Meetings. The report is based on the 2021 Interim Meeting Agenda offered in NCWM Publication 15; the 2021 NCWM Publication 16, “Committee Reports;” testimony at public hearings; comments received from the regional weights and measures associations and other parties; addendum sheets issued at the 2020 and 2021 Annual Meetings; actions taken by the membership at the voting sessions of the two (105th and 106th) Annual Meetings; and ratifications by the NCWM at the 106th Annual Meeting. This report contains those recommendations to amend National Institute of Standards and Technology (NIST) Handbook 44 (2019 and 2020), “Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices.”

Table A identifies the agenda items by reference key number, title of item, and page number and appendices by appendix items. The acronyms for organizations and technical terms used throughout the agenda are identified in Table B. During the 2020 Annual Meeting, the NCWM considered only those items designated by the S&T Committee as Voting items. The status of each item contained in the report is designated as one of the following **(V) Voting Item**: the Committee is making a recommendation requiring a vote by active members of NCWM or if the item was part of the Voting Consent calendar, it is indicated with the suffix “VC”; **(I) Informational Item**: the item is under consideration by the Committee but not proposed for Voting; **(A) Assigned Item**: the Committee has assigned development of the item to a recognized subcommittee or task group within NCWM; **(D) Developing Item**: the Committee determined the item has merit; however, the item was returned to the submitter or other designated party for further development before any action can be taken at the national level; and **(W) Withdrawn Item**: the item has been removed from consideration by the Committee.

Table C provides a summary of the results of the voting on the Committee’s items and the report in its entirety. Some Voting Items are considered individually; others may be grouped in a consent calendar. Consent calendar items are Voting Items that the Committee has assembled as a single Voting Item during their deliberation of the Open Hearings on the assumption that the items are without opposition and will not require discussion. The Voting Items that have been grouped into consent calendar items will be listed on the addendum sheets. Prior to the adoption of the consent calendar to be discussed and voted upon individually.

Committee may change the status designation of agenda items (Developing, Informational, Assigned, Voting, and Withdrawn) up until the report is adopted, except those items which are marked Developing, Informational, Assigned or Withdrawn cannot be changed to Voting Status. Any change from the Committee Interim or from what appears on the addendum sheets will be explained to the attendees prior to a motion and will be acted upon by active member of NCWM prior to the call for the vote.

Proposed revisions to the handbook are shown in **bold face print** by ~~striking out~~ information to be deleted and underlining information to be added. New items proposed for the handbook are designated as such and shown in **bold face print**.

Note: The policy of NIST and NCWM is to use metric units of measurement in all its publications; however, recommendations received by NCWM technical committees and regional weights and measures associations have been printed in this publication as submitted. Therefore, the report may contain references to U.S. customary units.

Subject Series List

NIST Handbook 44 – General Code.....	GEN Series
Scales.....	SCL Series
Belt-Conveyor Scale Systems	BCS Series
Automatic Bulk Weighing Systems	ABW Series
Weights.....	WTS Series
Automatic Weighing Systems	AWS Series
Weigh-In-Motion Systems used for Vehicle Enforcement Screening.....	WIM Series
Liquid-Measuring Devices	LMD Series
Vehicle-Tank Meters	VTM Series
Liquefied Petroleum Gas and Anhydrous Ammonia Liquid-Measuring Devices	LPG Series
Hydrocarbon Gas Vapor-Measuring Devices.....	HGV Series
Cryogenic Liquid-Measuring Devices.....	CLM Series
Milk Meters	MLK Series
Water Meters	WTR Series
Mass Flow Meters	MFM Series
Carbon Dioxide Liquid-Measuring Devices.....	CDL Series
Hydrogen Gas-Metering Devices	HGM Series
Electric Vehicle Refueling Systems	EVF Series
Vehicle Tanks Used as Measures	VTU Series
Liquid Measures	LQM Series
Farm Milk Tanks	FMT Series
Measure-Containers.....	MRC Series
Graduates.....	GDT Series
Dry Measures	DRY Series
Berry Baskets and Boxes.....	BBB Series
Fabric-Measuring Devices.....	FAB Series
Wire-and Cordage-Measuring Devices	WAC Series
Linear Measures	LIN Series
Odometers	ODO Series
Taximeters.....	TXI Series
Timing Devices	TIM Series
Grain Moisture Meters (a).....	GMA Series
Grain Moisture Meters (b).....	GMB Series
Near-Infrared Grain Analyzers.....	NIR Series
Multiple Dimension Measuring Devices	MDM Series
Electronic Livestock, Meat, and Poultry Evaluation Systems and/or Devices	LVS Series
Transportation Network Measuring Systems	TNS Series

Other Items OTH Series

Table A
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Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
ABWS	Automatic Bulk Weighing System	NEWMA	Northeastern Weights and Measures Association
AAR	Association of American Railroads	NIST	National Institute of Standards and Technology
API	American Petroleum Institute	NTEP	National Type Evaluation Program
CNG	Compressed Natural Gas	OIML	International Organization of Legal Metrology
CWMA	Central Weights and Measures Association	OWM	Office of Weights and Measures
EPO	Examination Procedure Outline	RMFD	Retail Motor Fuel Dispenser
FHWA	Federal Highway Administration	S&T	Specifications and Tolerances
GMM	Grain Moisture Meter	SD	Secure Digital
GPS	Global Positioning System	SI	International System of Units
HB	Handbook	SMA	Scale Manufacturers Association
LMD	Liquid Measuring Devices	SWMA	Southern Weights and Measures Association
LNG	Liquefied Natural Gas	TC	Technical Committee
LPG	Liquefied Petroleum Gas	USNWG	U.S. National Work Group
MMA	Meter Manufacturers Association	VTM	Vehicle Tank Meter
MDMD	Multiple Dimension Measuring Device	WIM	Weigh-in-Motion
NCWM	National Conference on Weights and Measures	WWMA	Western Weights and Measures Association

Table C Summary of Voting Results 2020 Annual					
<i>Reference Key Number</i>	<i>House of State Representatives</i>		<i>House of Delegates</i>		<i>Results</i>
	<i>Yeas</i>	<i>Nays</i>	<i>Yeas</i>	<i>Nays</i>	
Consent Calendar: SCL-20.13, LMD-20.2, LPG-20.1, WTR-20.2, EVF-19.1, TIM-20.1, GMA-20.1, MDM-20.1	39	1	53	0	Adopted
SCL-17.1	25	16	35	16	Returned to Committee
SCL-19.2	31	7	34	9	Adopted
SCL-20.10	27	11	36	15	Adopted
LMD-19.1	38	2	49	3	Adopted
WTR-20.1	39	1	41	1	Adopted
MFM-20.1	40	0	48	0	Adopted
To Accept the Report	38	0	46	1	Adopted
<p>The 105th NCWM Annual Meeting convened in July 2020, then adjourned to January 10, 2021, due to the lack of a quorum. NCWM reconvened the 105th Annual Meeting on that date and held virtual voting on the 2020 Agenda Items shown in the above table, “Table C, Summary of Voting Results 2020 Annual.” Robert’s Rules of Order allow virtual voting, provided that NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the NCWM Bylaws at that time and Robert’s Rules of Order, items adopted by a virtual vote are effective upon ratification at the next in-person opportunity. NCWM obtained a court order allowing for virtual voting at the 106th Annual Meeting in July 2021 to ratify the decisions of the 105th Annual Meeting, including a bylaw amendment allowing for official virtual voting at the 106th Annual Meeting. The 105th Annual Meeting items were ratified in a consent calendar on the Board of Directors Agenda at the 106th Annual Meeting.</p>					

Table C Summary of Voting Results 2021 Annual					
<i>Reference Key Number</i>	<i>House of State Representatives</i>		<i>House of Delegates</i>		<i>Results</i>
	<i>Yeas</i>	<i>Nays</i>	<i>Yeas</i>	<i>Nays</i>	
Consent Calendar: EVF-20.2, EVF-21.4, EVF-21.6	40	0	46	0	Adopted
SCL-17.1	33	9	31	12	Adopted
SCL-20.12	40	2	39	6	Adopted
VTM-20.2	24	17	30	14	Returned to Committee
OTH-21.1	36	6	42	2	Adopted
To Accept the Report	Voice Vote				Adopted

ITEM BLOCK 1 (B1) TERMINOLOGY FOR TESTING STANDARDS (VERIFICATION STANDARDS, FIELD STANDARDS, TRANSFER STANDARDS, FIELD REFERENCE STANDARDS, ETC.) TOLERANCES ON TESTS WHEN TRANSFER STANDARDS ARE USED, MINIMUM QUANTITY FOR FIELD REFERENCE STANDARD METER TESTS

B1: GEN-19.1	A	G-T.5. Tolerances on Tests When Transfer Standards are Used., Appendix D – Definitions: <u>standards, field,</u> transfer standard. and <u>standard, transfer.</u>
B1: SCL-18.1	A	N.2. Verification (Testing) Standards
B1: ABW-18.1	A	N.2. Verification (Testing) Standards
B1: AWS-18.1	A	N.1.3. Verification (Testing) Standards, N.3.1. Official Tests, UR.4. Testing Standards
B1: CLM-18.1	A	N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards
B1: CDL-18.1	A	N.3.2. Transfer Standard Test, T.3. On Tests Using Transfer Standards
B1: HGM-18.1	A	N.4.1. Master Meter (Transfer) Standard Test, T.4. Tolerance Application on Test Using Transfer Standard Test Method
B1: GMM-18.1	A	5.56(a): N.1.1. Air Oven Reference Method Transfer Standards, N.1.3. Meter to Like-Type Meter Method Transfer Standards and 5.56(b): N.1.1. Transfer Standards, T. Tolerances ¹
B1: LVS-18.1	A	N.2. Testing Standards
B1: OTH-18.1	A	Appendix A: Fundamental Considerations, 3.2. Tolerances for Standards, 3.3. Accuracy of Standards
B1: OTH-18.2	A	Appendix D – Definitions: fifth-wheel, official grain samples, transfer standard and Standard, Field

(Note: During the 2019 NCWM Interim Meeting, the S&T Committee considered the comments provided during Opening Hearings and recommended that the following items appearing on the 2019 Agenda, i.e., GEN-3, B1, B2, LPG-3 and MFM-5 be combined and gave these items an Assign status. Item Block 1 included previously numbered items: GEN-3; Block 1; Block 2; LPG-3; and MFM-5.)

(Note: During the 2021 NCWM Annual Meeting, the S&T Committee considered comments during Opening Hearings and recommended that all items that were combined with Block 1 “Terminology For Testing Standards...Meter Tests” and originally appeared as a separate item or separate block of items on the S&T agenda, be removed from Block 1 and appear as originally presented. As such, these items will appear on the 2022 NCWM Interim Meeting agenda as originally number as a separate item or separate block of items.)

Source:

NIST OWM, Endress + Hauser Flowtec AG USA (2018), and Seraphin Test Measure Co. (2019)

Purpose:

1. Add a definition for field standard that identifies the critical characteristics for field standards to comply with the Fundamental Considerations of Handbook 44; and
2. To add a generalized definition for transfer standards in NIST Handbook 44 to clearly include the transfer standards already referenced in various codes; and
3. To specify that when a transfer standard is used, the basic tolerances specified in NIST Handbook 44 be increased by the amount of the estimated uncertainty associated with the transfer standard
4. To remove the current limited definition and use of the term “Transfer Standard” and eliminate terms “Testing Standards”, “Verification (Testing) Standards”, and instead use the term Field Standard, consistent with its reference in NIST Handbook 44, Appendix A, Fundamental Considerations and its use in several sections of NIST Handbook 44. To correct the broad use of the term Transfer Standard and instead replace

its use with the term Field Standard. To update all use of the term “standard” to use the term “Field Standard”. To remove the current limited definition of Transfer Standard and instead use the term Field Standard.

B1: GEN-19.1 A G-T.5. Tolerances on Tests When Transfer Standards are Used., Appendix D – Definitions: standards, field., transfer standard. and standard, transfer.

Source:

Seraphin Test Measure Co.

Purpose:

1. Add a definition for field standard that identifies the critical characteristics for field standards to comply with the Fundamental Considerations of Handbook 44 (specifically, a standard that has long-term stability and meets the one-third requirement for accuracy and uncertainty over the range of environmental and operational variables in which commercial measuring devices are used); and
2. To add a generalized definition for transfer standards in Handbook 44 to clearly include the transfer standards already referenced in various codes; and
3. To specify that when a transfer standard is used, the basic tolerances specified in Handbook 44 be increased the amount of the estimated uncertainty associated with the transfer standard.

Item Under Consideration:

Amend NIST Handbook 44, General Code as follows:

G-T.5. Tolerances on Tests When Transfer Standards Are Used. – To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable transfer standard when compared to a basic reference standard.

The codes 5.56.(a) Grain Moisture Meters, 5.56.(b) Grain Moisture Meters, and 5.57. Near-Infrared Grain Analyzers are exempt from this requirement, because NIST Handbook 159 has requirements for monitoring and retesting grain samples to ensure adequate stability and the tolerances for the devices under test already incorporate the uncertainty associated with the use of grain samples as transfer standards. The code 2.21. Belt-Conveyor Scale Systems is also exempt, because relative and absolute tolerances are included in the code.

And amend NIST Handbook 44 Appendix D – Definitions as follows:

Standard, Field. – A physical standard that (a) is stable (accurate and repeatable) over an extended period of time (typically one year) and (b) meets the specifications and tolerances in NIST Handbook 105- series standards (or other suitable and designated standards) over the range of environmental and operational parameters in which the commercial measuring devices are used and is traceable to the reference or working standards through comparisons, using acceptable laboratory procedures, and used in conjunction with commercial weighing and measuring equipment. “Other suitable and designated standards” must show that the field standards have been tested over the range of environmental and operational parameters in which the commercial measuring devices under test are used and prove that the performance of the field standard meets the requirements of the fundamental considerations.

transfer standard. – A measurement system designed for use in proving and testing cryogenic liquid measuring devices. [3.38]

Standard, Transfer. – A physical artifact, static or dynamic measurement device or a reference material that is stable (accurate and repeatable) for a short time period under the limited environmental and operational conditions during which the transfer standard is used. A transfer standard may be used as a temporary measurement reference to check the accuracy of a commercial measuring instrument, but the transfer standard does not satisfy the NIST Handbook 44 Fundamental Consideration that its correction and uncertainty are less than one-third of the smallest tolerance applied to the commercial measuring instrument under test, either over

a long time period or a wide range of environmental or operating parameters. Transfer standards are called by different terms in different Handbook 44 codes and include terms such as master meter, fifth wheel, material, reference weight [railroad] cars, test vehicles and reference vehicle.

ITEM BLOCK 1 (B1) TERMINOLOGY FOR TESTING STANDARDS

(Original B1 items)

Source:

NIST OWM

Purpose:

To remove the current limited definition and use of the term “Transfer Standard” and eliminate terms “Testing Standards”, “Verification (Testing) Standards”, and instead use the term Field Standard, consistent with its reference in Handbook 44, Appendix A, Fundamental Considerations and its use in several sections of Handbook 44. To correct the broad use of the term Transfer Standard and instead replace its use with the term Field Standard. To update all use of the term “standard” to use the term “Field Standard”. To remove the current limited definition of Transfer Standard and instead use the term Field Standard.

B1: SCL-18.1 A N.2. Verification (Testing) Standards

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

N.2. ~~Verification (Testing)~~ Field Standards. – Field standard weights used in verifying weighing devices shall comply with requirements of NIST Handbook 105-Series standards (or other suitable and designated standards) or the tolerances expressed in Fundamental Considerations, paragraph 3.2. (i.e., one-third of the smallest tolerance applied).

(Amended 1986 and 20XX)

B1: ABW-18.1 A N.2. Verification (Testing) Standards

Item Under Consideration:

Amend NIST Handbook 44, Automatic Bulk Weighing Systems Code as follows:

N.2. ~~Verification (Testing)~~ Field Standards. – ~~Field S~~standard weights and masses used in verifying weighing devices shall comply with requirements of NIST Handbook 105-1 (Class F) or the tolerances expressed in Appendix A, Fundamental Considerations, paragraph 3.2. (i.e., one-third of the smallest tolerance applied).

(Amended 20XX)

B1: AWS-18.1 A N.1.3. Verification (Testing) Standards, N.3.1. Official Tests, UR.4. Testing Standards

Item Under Consideration:

Amend NIST Handbook 44, Automatic Weighing Systems Code as follows:

N.1.3. ~~Verification (Testing)~~ Field Standards. – Field standard weights shall comply with requirements of NIST Handbook 105-1, “Specifications and Tolerances for Field Standard Weights (Class F)” or the tolerances expressed in Fundamental Considerations, paragraph 3.2. (i.e., one-third of the smallest tolerance applied).

(Amended 20XX)

N.3.1. Official Tests. – Officials are encouraged to periodically witness the required “in house” verification of accuracy. Officials may also conduct official tests using the on-site **testing-field** standards or other appropriate standards belonging to the jurisdiction with statutory authority over the device or system.

(Amended 20XX)

UR.4. Testing-Field Standards. – The user of a commercial device shall make available to the official with statutory authority over the device **testing-field** standards that meet the tolerance expressed in Fundamental Considerations, paragraph 3.2. Tolerances for Standards (i.e., one-third of the smallest tolerance applied). The accuracy of the **testing-field** standards shall be verified annually or on a frequency as required by the official with statutory authority and shall be traceable to the appropriate SI standard.

(Amended 20XX)

B1: CLM-18.1 A N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards

Item Under Consideration:

Amend NIST Handbook 44, Cryogenic Liquid-Measuring Devices Code as follows:

N.3.2. Transfer Field Standard Test. – When comparing a meter with a calibrated **transfer field** standard, the test draft shall be equal to at least the amount delivered by the device in two minutes at its maximum discharge rate, and shall in no case be less than 180 L (50 gal) or equivalent thereof. When testing uncompensated volumetric meters in a continuous recycle mode, appropriate corrections shall be applied if product conditions are abnormally affected by this test mode.

(Amended 1976 and 20XX)

~~**T.3. On Tests Using Transfer Standards.** – To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable transfer standard when compared to a basic reference standard. (Added 1976)~~

B1: CDL-18.1 A N.3.2. Transfer Standard Test, T.3. On Tests Using Transfer Standards

Item Under Consideration:

Amend NIST Handbook 44, Carbon Dioxide Liquid-Measuring Devices Code as follows:

N.3.2. Transfer Field Standard Test. – When comparing a meter with a calibrated **transfer field** standard, the test draft shall be equal to at least the amount delivered by the device in two minutes at its maximum discharge rate.

(Amended 20XX)

~~**T.3. On Tests Using Transfer Standards.** – To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable transfer standard when compared to a basic reference standard.~~

B1: HGM-18.1 A N.4.1. Master Meter (Transfer) Standard Test, T.4. Tolerance Application on Test Using Transfer Standard Test Method

Item Under Consideration:

Amend NIST Handbook 44, Hydrogen Gas-Measuring Devices Tentative Code as follows:

N.4.1. Master Meter (Transfer) Field Standard Test. – When comparing a measuring system with a calibrated **transfer-field** standard, the minimum test shall be one test draft at the declared minimum measured quantity and one test draft at approximately ten times the minimum measured quantity or 1 kg, whichever is greater. More tests may be performed over the range of normal quantities dispensed.

(Amended 2021XX)

~~T.4. Tolerance Application on Test Using Transfer Standard Test Method.—To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable transfer standard when compared to a basic reference standard.~~

B1: GMM-18.1 A 5.56(a): N.1.1. Air Oven Reference Method Transfer Standards, N.1.3. Meter to Like-Type Meter Method Transfer Standards and 5.56(b): N.1.1. Transfer Standards, T. Tolerances¹

Item Under Consideration:

Amend NIST Handbook 44, Grain Moisture Meters Code as follows:

5.56.(a) Grain Moisture Meters

N.1.1. Air Oven Reference Method ~~Transfer~~-Field Standards. – Official grain samples shall be used as the official ~~transfer~~ field standards with moisture content and test weight per bushel values assigned by the reference methods. The reference methods for moisture shall be the oven drying methods as specified by the USDA GIPSA. The test weight per bushel value assigned to a test weight transfer standard shall be the average of 10 test weight per bushel determinations using the quart kettle test weight per bushel apparatus as specified by the USDA GIPSA. Tolerances shall be applied to the average of at least three measurements on each official grain sample. Official grain samples shall be clean and naturally moist, but not tempered (i.e., water not added).

(Amended 1992, 2001, ~~and~~ 2003, and 20XX)

N.1.3. Meter to Like-Type Meter Method Transfer Standards. – Properly standardized reference meters using National Type Evaluation Program approved calibrations shall be used as ~~transfer~~ field standards. A reference meter shall be of the same type as the meter under test. Tests shall be conducted side-by-side using, as a comparison medium, grain samples that are clean and naturally moist, but not tempered (i.e., water not added).

(Added 2001) (Amended 20XX)

5.56.(b) Grain Moisture Meters

N.1.1. ~~Transfer~~ Field Standards. – Official grain samples shall be used as the official ~~transfer~~ field standards with moisture content values assigned by the reference methods. The reference methods shall be the oven drying methods as specified by the USDA GIPSA. Tolerances shall be applied to the average of at least three measurements on each official grain sample. Official grain samples shall be clean and naturally moist, but not tempered (i.e., water not added).

(Amended 1992 and 20XX)

T. Tolerances¹

¹These tolerances do not apply to tests in which grain moisture meters are the ~~transfer~~ field standards.

(Amended 20XX)

B1: LVS-18.1 A N.2. Testing Standards

Item Under Consideration:

Amend NIST Handbook 44, Electronic Livestock, Meat and Poultry Evaluation Systems and/or Devices Code as follows:

N.2. ~~Testing-Field~~ Standards. – ASTM Standard F2343 requires device or system users to maintain accurate ~~reference-field~~ standards that meet the tolerance expressed in NIST Handbook 44 Fundamental Considerations, paragraph 3.2. Tolerances for Standards (i.e., one-third of the smallest tolerance applied).

(Amended 20XX)

B1: OTH-18.1 A Appendix A: Fundamental Considerations, 3.2. Tolerances for Standards, 3.3. Accuracy of Standards

Item Under Consideration:

Amend NIST Handbook 44, Appendix A: Fundamental Considerations as follows:

3.2. Tolerances for Field Standards. – Except for work of relatively high precision, it is recommended that the accuracy of standards used in testing commercial weighing and measuring equipment be established and maintained so that the use of corrections is not necessary. When the standard is used without correction, its combined error and uncertainty must be less than one-third of the applicable device tolerance.

Device testing is complicated to some degree when corrections to standards are applied. When using a correction for a standard, the uncertainty associated with the corrected value must be less than one-third of the applicable device tolerance. The reason for this requirement is to give the device being tested as nearly as practicable the full benefit of its own tolerance.

(Amended 20XX)

3.3. Accuracy of Field Standards. – Prior to the official use of testing apparatus, its accuracy should invariably be verified. Field standards should be calibrated as often as circumstances require. By their nature, metal volumetric field standards are more susceptible to damage in handling than are standards of some other types. A field standard should be calibrated whenever damage is known or suspected to have occurred or significant repairs have been made. In addition, field standards, particularly volumetric standards, should be calibrated with sufficient frequency to affirm their continued accuracy, so that the official may always be in an unassailable position with respect to the accuracy of his testing apparatus. Secondary field standards, such as special fabric testing tapes, should be verified much more frequently than such basic standards as steel tapes or volumetric provers to demonstrate their constancy of value or performance.

Accurate and dependable results cannot be obtained with faulty or inadequate field standards. If either the service person or official is poorly equipped, their results cannot be expected to check consistently. Disagreements can be avoided, and the servicing of commercial equipment can be expedited and improved if service persons and officials give equal attention to the adequacy and maintenance of their testing

(Amended 20XX)

B1: OTH-18.2 A Appendix D – Definitions: fifth-wheel, official grain samples, transfer standard and Standard, Field

Item Under Consideration:

Amend NIST Handbook 44, Appendix A: Fundamental Considerations as follows:

fifth wheel. – A commercially-available distance-measuring device which, after calibration, is recommended for use as a field ~~transfer~~ standard for testing the accuracy of taximeters and odometers on rented vehicles. [5.53, 5.54]

(Amended 20XX)

official grain samples. – Grain or seed used by the official as the official ~~transfer field~~ standard from the reference standard method to test the accuracy and precision of grain moisture meters. [5.56(a), 5.56(b)]

(Amended 20XX)

~~transfer standard. — A measurement system designed for use in proving and testing cryogenic liquid measuring devices. [3.38]~~

Standard, Field. – A physical standard that meets specifications and tolerances in NIST Handbook 105-series standards (or other suitable and designated standards) and is traceable to the reference or working standards through comparisons, using acceptable laboratory procedures, and used in conjunction with commercial weighing and measuring equipment.

(Added 20XX)

ITEM BLOCK 1 (B1) DEFINE “FIELD REFERENCE STANDARD”

(Original ITEM Block 2 Items)

B1: CLM-18.2	A	N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards
B1: CDL-18.2	A	N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards
B1: HGM-18.2	A	N.4.1. Master Meter (Transfer) Standard Test and T.4. Tolerance Application on Test Using Transfer Standard Test Method
B1: OTH-18.3	A	Appendix D – Definitions: <u>field reference standard meter</u> and transfer standard
B1: LPG-15.1	A	N.3. Test Drafts.
B1: MFM-15.1	A	N.3. Test Drafts.

Source: Endress + Hauser Flowtec AG USA

B1: CLM-18.2 A N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards

Item Under Consideration:

Amend NIST Handbook 44, Cryogenic Liquid-Measuring Devices Code as follows:

N.3.2. Field Reference ~~Transfer Standard~~ Meter Test. – When comparing a meter with a calibrated field reference ~~transfer~~ standard meter, the test draft shall be equal to at least the amount delivered by the device in two minutes at its maximum discharge rate, and shall in no case be less than 180 L (50 gal) or equivalent thereof. When testing uncompensated volumetric meters in a continuous recycle mode, appropriate corrections shall be applied if product conditions are abnormally affected by this test mode.

(Amended 1976 and 20XX)

T.3. On Tests Using Field Reference ~~Transfer Standards~~ Meters. – To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable field reference ~~transfer~~ standard meter when compared to a basic reference standard. (Added 1976)

B1: CDL-18.2 A N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards

Item Under Consideration:

Amend NIST Handbook 44, Carbon Dioxide Liquid-Measuring Devices Code as follows:

N.3.2. Field Reference ~~Transfer~~ Standard Meter Test. – When comparing a meter with a calibrated field reference ~~transfer~~ standard meter, the test draft shall be equal to at least the amount delivered by the device in two minutes at its maximum discharge rate.

(Amended 20XX)

T.3. On Tests Using Field Reference ~~Transfer Standards~~ Meters. – To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable field reference ~~transfer~~ standard when compared to a basic field reference ~~reference~~ standard meter.

B1: HGM-18.2 A N.4.1. Master Meter (Transfer) Standard Test and T.4. Tolerance Application on Test Using Transfer Standard Test Method

Item Under Consideration:

Amend NIST Handbook 44, Hydrogen Gas-Measuring Devices Tentative Code as follows:

N.4.1. ~~Field Reference Master Meter (Transfer) Standard Meter Test.~~ – When comparing a measuring system with a calibrated ~~field reference transfer~~ standard ~~meter~~, the minimum test shall be one test draft at the declared minimum measured quantity and one test draft at approximately ten times the minimum measured quantity or 1 kg, whichever is greater. More tests may be performed over the range of normal quantities dispensed.

(Amended 20XX)

T.4. Tolerance Application on Test Using ~~Field Reference Transfer Standard Meters Test Method.~~ – To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable ~~field reference transfer~~ standard ~~meter~~ when compared to a basic reference standard.

B1: OTH-18.3 A Appendix D - Definitions: field reference standard meter and ~~transfer standard~~

Item Under Consideration:

Amend NIST Handbook 44, Appendix D as follows:

field reference standard meter – A measurement system designed for use in proving and testing measuring devices and meters.

~~transfer standard – A measurement system designed for use in proving and testing cryogenic liquid measuring devices.~~

B1: LPG-15.1 A N.3. Test Drafts.

Source:

Endress + Hauser Flowtec AG USA

Item Under Consideration:

Amend NIST Handbook 44, LPG and Anhydrous Ammonia Liquid-Measuring Devices as follows:

N.3. Test Drafts.

N.3.1 Minimum Test - Test drafts should be equal to at least the amount delivered by the device in 1 minute at its normal discharge rate.

(Amended 1982)

N.3.2. Field Reference Standard Meter Test. – The minimum quantity for any test draft shall be equal to or greater than the amount delivered in one minute at the flow rate being tested.

(Added 20XX)

B1: MFM-15.1 A N.3. Test Drafts.

Source:

Endress + Hauser Flowtec AG USA

Item Under Consideration:

Amend NIST Handbook 44, Mass Flow Meters Code as follows:

N.3. Test Drafts.

N.3.1 Minimum Test - The minimum test shall be one test draft at the maximum flow rate of the installation and one test draft at the minimum flow rate. More tests may be performed at these or other flow rates. (See T.3. Repeatability.)

(Amended 1982 **and 20XX**)

N.3.2. Field Reference Standard Meter Test. – The minimum quantity for any test draft shall be equal to or greater than the amount delivered in one minute at the flow rate being tested.

(Added 20XX)

Background/Discussion:

These items have been assigned to the Field Standards Task Group for further development. For more information or to provide comment, please contact the Task Group Chair:

Mr. Jason Glass
Kentucky Department of Agriculture
502-573-0282, jason.glass@ky.gov

(**Note:** During the 2020 NCWM Annual Meeting Open Hearings, Mr. Glass reported that he would be stepping down as the Field Standard TG Chair. As of the writing of this report, a new field standard TG Chair has not been appointed.)

The term transfer standard is currently defined in NIST HB 44 as only being applicable to the Cryogenic Liquid Measuring Devices Code. This definition should be removed as it is very limited in scope and the item termed a “transfer standard” is in fact a robust working measurement standard used in field conditions, better termed and shortened to Field Standard. All instruments/devices used as a Field Standard in the testing of Weighing and Measuring Devices, regardless of nomenclature, must comply with the requirements of NIST HB 44, Appendix A, Fundamental Considerations Associated with the Enforcement of NIST Handbook 44 Codes, paragraph 3.2 Testing Apparatus, Adequacy. Using the term transfer standard as it is recently being applied in no way negates this requirement of adequacy and confuses the user as to the nature of the field standard being used.

Use of the single word ‘standard’ to signify use of a field standard can be confusing as there are a number of different meanings associated with “standard.” It could be a documentary standard, i.e., NIST HB 44; a primary standard used to realize the SI, i.e., Watt Balance; a laboratory reference standard used to ensure traceability of laboratory measurements to the SI, i.e., NIST calibrated laboratory standards; a laboratory check standard used to monitor the laboratory process. Use of the single word ‘standard’ requires that the reader understand completely the context of its use. Instead, using the term “Field Standard” ensures that the reader understands that the item described is a robust working standard used in field conditions to ensure traceability of the subordinate measurements to the SI and leaves no ambiguity in its meaning. Thus, the recommended changes to NIST HB 44 align that document with the NIST HB 130, removing ambiguity and adding clarity to the use of Field Standards for device testing.

During the 2018 NCWM Interim Meeting opening hearings, the Committee heard comments on the proposal (then identified as Block 4) and agreed to recommend that the entire block of items move forward as Developing. The Committee also concluded that all of the items listed at that time as Block 5 items, as well as LPG-4, and MFM-2 are related to the Block 4 items due to terminology.

The Committee received written comments on all items in Block 4 and Block 5, as well as LPG-4 and MFM-2 emphasizing the need for there to be more study and discussion of the issues to assess the ramifications of all the proposed changes. The Committee also received written comments from the SMA that it looks forward to further information on these items and stating that it is important to be consistent in our use of terms across multiple sections of NIST Handbook 44. The Committee agreed to carryover this group of items on its 2019 agenda to allow for further discussion and development of these proposals.

At the 2019 NCWM Interim Meeting, the S&T Committee decided to combine the items on the agenda dealing with the issue of transfer standard (including items already combined into blocks) into one block. Block 1 (New) of the Interim Meeting report now includes Gen-3, Block 1 (original items from the 2019 interim agenda that appeared under Block 1), Block 2, LPG-3 and MFM-5, which were all separate items and blocks of items on the S&T Committee's 2019 Interim Meeting agenda (NCWM Publication 15). Agenda items Gen-3, Block 1, Block 2, LPG-3, and MFM-5 are listed separately on the Interim agenda with a note added beneath each individual item referring the reader to the New B1 items. All items under this New B1 have retained the same numbering system for ease in referring to the appendix for discussion on each item.

During the 2019 NCWM Annual Meeting, the Committee heard from Mr. Brett Gurney (NCWM Chairman) regarding the formation of a Task Group (TG) assigned to further develop this block proposal. The TG is charged with providing definitions for various types of standards (transfer, field, reference, etc.) as well as the criteria to be met by these types of standards. Mr. Jason Glass (Kentucky) was selected to chair the TG. The completion date given to the TG is July 2021. The Committee agreed to the Assigned status for this block of items and looks forward to hearing updates from the TG.

During the 2020 NCWM Interim Meeting, the Committee heard from Field Standard TG Chair Glass assigned to further develop Block 1 items. Mr. Glass reported that the TG had met prior to the 2020 NCWM Interim Meeting and had begun discussion of the items under Block 1. Mr. Glass stated that bi-weekly teleconference meetings were scheduled and that the group was optimistic but had significant work to accomplish.

Mr. Russ Vires (SMA) supports the Scale item, SCL 18.1; in this block, Mr. Dimitri Karimov (Meter Manufacturers Association) supports the Task Group activities, Mrs. Tina Butcher (NIST OWM) was encouraged with the progress on terminology and provided an update on the Mass Flow Meter testing reporting that field testing was conducted October 28 to November 1, 2019, and that State and Industry participation included Colorado, Florida, Oregon, Emerson, and Tulsa Gas Technology.

Mr. Kurt Floren (Los Angeles County, California) raised concerns with GEN-19.1. regarding the definition of "Standard, Field" and its reference to "stable" standards and how long a standard is expected to remain stable, which is typically 1-year, for which he believes should be longer. Mr. Floren also questioned the statement in the definition "tested over a range of environmental and operational conditions that the measuring devices is used..." Mr. Floren noted that he was unsure if all laboratories will have the capabilities to test over this wide range of conditions. Mr. Floren also expressed concerns with the definition "Standard, Transfer" citing that this standard may not meet the fundamental considerations requirement for standards over a long period of time or wide range of environmental conditions.

Mr. Steve Harrington (Oregon) echoed Mr. Floren's comments. TG Chair Mr. Glass responded that these are also concerns of the TG and these issues will be discussed and considered as the TG develops these items.

During the Committee's work session, the Committee agreed that this item should remain in an Assigned status.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items, including this block of items, were addressed in the subsequent 2021 NCWM Interim Meeting.

During the Committee's 2021 Interim Meeting, the Committee heard from Field Standard TG Chair Mr. Glass, who provided an update on TG activities. Mr. Glass reported that the TG is following the activities of the NIST Master Meter Project and that the TG reviewed API specifications for use of master meters as a standard and a test protocol that will be used to ensure uniformity in collecting data on master meters used as field standards. He also reported that the TG does not have a recommendation for this item. Mr. Glass also reported that he would be stepping down as the TG Chair. Mr. Micheal Keilty (Endress + Hauser) thanked Chair Glass and the TG for their work and requested that Block 1, LPG-15.1, N.3. and Block 1 MFM-15.1, N.3 be removed from Block 1 items and to allow those items to move forward separate from the other Block 1 Items. Mr. Keilty stated that similar language was added to the Hydrogen code and that the proposed language in LPG-15.1 N.3. and MFM-15.1, N.3 will allow for the recognition of master meters as field standards. Mr. Henry Oppermann (WM-Consulting) stated that data is needed to ensure that

master meters can be used over a range of conditions. Mr. Robert Murnane (Seraphin) stated that jurisdictions have the ability to use meters and that Block 1 LPG-15.1, N.3 and Block 1 MM-15.1, N.3 should remain in Block 1 until data is available to support the use of master meters as a standard. Mr. Keilty mentioned that there has been useful dialog regarding master meters in the TG, but that he is concerned that the TG is not close to making a decision and he expressed concerns with the TG's focus on the NIST Master Meter Project. Mrs. Butcher provided an update on the NIST Master Meter Project and noted that states have the regulatory powers to accept or reject a standard. She also mentioned that NIST is working with different states to collect data needed to assess master meters and preliminary testing was conducted and data was collected on CNG at Tulsa Gas Technology's facility in fall 2019. Ms. Diane Lee (NIST OWM) noted that NIST OWM feels that it is premature to add more language to the NIST Handbook 44 on master meters without data to support its use.

During the Committee's work session, the Committee agreed to keep all items in Block 1 and that this block of items should remain with an Assigned status.

During the 2021 NCWM Annual Meeting Open Hearings, Mr. Glass reported again that he would be stepping down as the Field Standard TG Chair. The Committee heard updates from members of the TG during open hearings. Mr. Keilty noted that two of the items had been on the agenda since 2015 and requested that they be removed from the block and recommended recognizing the use of master meters. Other comments were to keep the items together until data is analyzed from the NIST Field Reference Standard Work Group to support the use of master meters but that if some items were removed from the block, all items should be removed from the block. Based on comments heard during the 2021 Annual Meeting, the S&T Committee recommended that all items that were included in Block 1 "Terminology For Testing Standards" that originally appeared as a separate item or a separate block of items on the S&T agenda in and prior to 2019, be removed from Block 1 "Terminology For Testing Standards" and appear as originally presented.

During its work session at the NCWM 2021 Annual Meeting, the Committee agreed to break all items in Block 1 into individual items and designate them all as Developing. The Committee also recognized that the TG had accomplished enough of its charge (i.e., the tasks assigned) to recommend it be disbanded. The Committee agreed to recommend to the Chairman of the NCWM that the TG be disbanded. The Committee thanks the TG, especially its members for their work.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2020 WWMA Annual Meeting, the WWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 SWMA Annual Meeting, the SWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 NEWMA Interim Meeting, the NEWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

During the 2020 Interim Meeting, Ms. Lee, a member of the Field Standards Task Group, gave an update of the progress of this item to the S&T committee. We look forward to the work of the task group.

At the NEWMA 2021 Annual Meeting, comments were received on the entire block. Ms. Lee commented that there is currently discussion for definitions of field standards and work for testing of master meters. Mr. Vires, speaking on behalf of the SMA supported the development as it applies to items GEN-19.1, SCL-18.1, ABW-18.1, and AWS-18.1 and looks forward to further development. Mrs. Butcher gave an overview of the master meter project and the different types of testing to be performed. Mr. Murnane commented that the Field Standard Task Group is currently without a chairman and at a standstill on definitions until a new chairman is found. Mr. Ross Anderson (New York, retired) expressed concerns with testing versus calibrating and the associated uncertainties. Mr. Anderson is concerned that calibrating will require additional uncertainty components that must be developed using control charts and

proficiency tests. The cost and time of this to an inspector is not practical. Ms. Lee is concerned that tolerances may be too small to encompass uncertainties in the field. The NEWMA S&T Committee recommends that this item remain with Assigned status.

At the CWMA 2021 Annual Meeting, comments were taken on the whole block. Ms. Lee reported that testing with NIST master meters is underway. CNG meters are being tested in Colorado. The LPG master meter is to set to begin being used shortly. There are two separate task groups working on this project. The NCWM Field Standards Task Group is looking for a new chairman. Mr. Vires stated that the SMA supports continued efforts on this proposal. Mr. Doug Musick (Kansas) support the items moving forward but more information is needed concerning their use. Mr. Murnane stated that not much more can be done without data to show that meters can be used as a standard. Seraphin stated that there is a paper discussing direction for the task group. Mrs. Butcher stated that testing for the different types of the master meters would occur simultaneously to speed up the data collection and analysis of the data. Mr. Charlie Stutesman (Kansas) asked if there was a date for conclusion of the task group activities and expressed the need to stay on top of this item. He suggested that there may be a need to set a sunset date for the activities of the task group. Mr. Loren Minnich (Kansas) reported that NCWM set an original goal of July 2021 to complete the mission, but it is not a deadline. Mrs. Butcher reported on what the master meters group is trying to achieve. Mrs. Butcher reminded the group that the Fundamental Considerations allows states to use master meters. NIST OWM is assisting states with determining that these "master meters" would be viable for use as a field standard Adding something to the Fundamental Considerations to clarify that states can use them may be helpful. NIST is currently focusing on the Coriolis meter but what will come out of the study will be protocols that States can apply to other meter technologies. The CWMA S&T Committee recommends that this item remain an Assigned item.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

ITEM BLOCK 2 (B2) DEFINE TRUE VALUE FOR USE IN ERROR CALCULATIONS

B2: SCL-20.3	I	S.5.4. Relationship of Minimum Load Cell Verification Interval to the Scale Division
B2: SCL-20.4	I	Table 3. Parameters of Accuracy Classes.
B2: SCL-20.5	I	Table S.6.3.a. Marking Requirements, Note 3.
B2: SCL-20.6	I	T.N.1.2. Accuracy Classes and T.N.1.3. Scale Division.
B2: SCL-20.7	I	Table 7. Maintenance Tolerances
B2: SCL-20.8	I	Table 8. Recommended Minimum Load

(**Note:** At the 2020 NCWM Interim Meeting, the Committee agreed to remove GEN-20.1, SCL-20.1 and SCL-20.2 from Block 2 and they be given individual consideration. The items now included in Block 2 (B2) are SCL-20.3, SCL-20.4, SCL-20.5, SCL-20.6, SCL-20.7 and SCL-20.8.)

Source:

Mr. Ross Andersen (Retired)

Purpose:

This proposal has four parts:

1. Clarify the concepts in determining error in verification.
2. Correct Code references to ensure correct reference to either e or d, as appropriate.
3. Correct Code references regarding issues of scale suitability Table 8.
4. Explain why e and d are not connected.

B2: SCL-20.3 I S.5.4. Relationship of Minimum Load Cell Verification Interval to the Scale Division

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

S.5.4. Relationship of Minimum Load Cell Verification Interval Value to the Scale Division – The relationship of the value for the minimum load cell verification scale interval, v_{min} , to the verification scale division, ~~d~~ e , for a specific scale using National Type Evaluation Program (NTEP) certified load cells shall comply with the following formulae where N is the number of load cells in a single independent¹ weighing/load-receiving element (such as hopper, railroad track, or vehicle scale weighing/load-receiving elements):

$$v_{min} \leq \frac{\cancel{d} e}{\sqrt{N}} \text{ for scales without lever systems; and}$$

$$(a) \ v_{min} \leq \frac{\cancel{d} e}{\sqrt{N} \times (\text{scale multiple})} \text{ for scales with lever systems.}$$

¹"Independent" means with a weighing/load-receiving element not attached to adjacent elements and with its own A/D conversion circuitry and displayed weight.

~~[*When the value of the scale division, d , is different from the verification scale division, e , for the scale, the value of e must be used in the formulae above.]~~

This requirement does not apply to complete weighing/load-receiving elements or scales, which satisfy all the following criteria:

- the complete weighing/load-receiving element or scale has been evaluated for compliance with T.N.8.1. Temperature under the NTEP;
- the complete weighing/load-receiving element or scale has received an NTEP Certificate of Conformance; and
- the complete weighing/load-receiving element or scale is equipped with an automatic zero-tracking mechanism which cannot be made inoperative in the normal weighing mode. (A test mode which permits the disabling of the automatic zero-tracking mechanism is permissible, provided the scale cannot function normally while in this mode.

[Nonretroactive as of January 1, 1994]

(Added 1993) (Amended 1996, ~~and~~ 2016, and 20XX)

B2: SCL-20.4 I Table 3. Parameters of Accuracy Classes.

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

Table 3. Parameters for Accuracy Classes			
Class	Value of the Verification Scale Division e^1 (d or e^1)	Number of Scale ⁴ Divisions (n)	
		Minimum	Maximum
SI Units			
I	equal to or greater than 1 mg	50 000	--
II	1 to 50 mg, inclusive	100	100 000

III ^{2,5}	equal to or greater than 100 mg	5 000	100 000
	0.1 to 2 g, inclusive	100	10 000
	equal to or greater than 5 g	500	10 000
III L ³	equal to or greater than 2 kg	2 000	10 000
III	equal to or greater than 5 g	100	1 200
U.S. Customary Units			
III ⁵	0.0002 lb to 0.005 lb, inclusive	100	10 000
	0.005 oz to 0.125 oz, inclusive	100	10 000
	equal to or greater than 0.01 lb	500	10 000
	equal to or greater than 0.25 oz	500	10 000
III L ³	equal to or greater than 5 lb	2 000	10 000
III	greater than 0.01 lb	100	1 200
	greater than 0.25 oz	100	1 200
<p>¹ <u>For Class I and II devices equipped with auxiliary reading means (i.e., a rider, a vernier, or a least significant decimal differentiated by size, shape, or color), the value of the verification scale division “e” is the value of the scale division immediately preceding the auxiliary means. The manufacturer may design a scale such that the verification scale division e does not be equal to the scale division d. To ensure the correct value for e is used, refer to marking requirements in footnotes 3 and 4 to Table S.6.3.a. and Table S.6.3.b.</u></p> <p><u>(Amended 20XX)</u></p> <p>² A Class III scale marked “For prescription weighing only” may have a verification scale division (e) not less than 0.01 g.</p> <p>(Added 1986) (Amended 2003)</p> <p>³ The value of a <u>the verification</u> scale division (<u>e</u>) for crane and hopper (other than grain hopper scales shall be not be less than 0.2 kg (0.5 lb). The minimum number of scale divisions shall be not less than 1000.</p> <p><u>(Amended 20XX)</u></p> <p>⁴ On a multiple range or multi-interval scale, the number of divisions for each range independently shall not exceed the maximum specified for the accuracy class. The number of scale divisions, n, for each weighing range is determined by dividing the scale capacity for each range by the verification scale division, e, for each range. On a scale system with multiple load-receiving elements and multiple indications, each element considered shall not independently exceed the maximum specified for the accuracy class. If the system has a summing indicator, the n_{max} for the summed indication shall not exceed the maximum specified for the accuracy class.</p> <p>(Added 1997)</p> <p>⁵ The minimum number of scale divisions for a Class III Hopper Scale used for weighing grain shall be 2000.)</p>			

[Nonretroactive as of January 1, 1986]

(Amended 1986, 1987, 1997, 1998, 1999, 2003, ~~and~~ 2004, **and 20XX**)

B2: SCL-20.5 I Table S.6.3.a. Marking Requirements, Note 3.

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

- The device shall be marked with the nominal capacity. *The nominal capacity shall be shown together with the value of the scale division “d” (e.g., 15×0.005 kg, 30×0.01 lb, or capacity = 15 kg, $d = 0.005$ kg) in a clear*

and conspicuous manner and be readily apparent when viewing the reading face of the scale indicator unless already apparent by the design of the device. Each scale division value ~~or weight unit with its associated nominal capacity~~ shall be marked on multiple range or multi-interval scales. In the absence of a separate marking of the verification scale division “e” (see Note 4), the value of the verification scale division e shall be equal to the value of the scale division d.

[Nonretroactive as of January 1, 1983]

(Amended 2005 and 20XX)

B2: SCL-20.6 I T.N.1.2. Accuracy Classes and T.N.1.3. Scale Division.

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

T.N.1.2. Accuracy Classes. – Weighing devices are divided into accuracy classes according to the number of scale divisions (n) and the value of the verification scale division (e).

T.N.1.3. Scale Division. – This Code contains references to two types of scale divisions, the verification scale division (e) and the scale division (d) (see definitions in Appendix D.). The tolerance for a weighing device is in the order of magnitude of related to the value of the scale division (d) or the value of the verification scale division (e) and is generally expressed in terms of d or e. Other technical requirements may reference either the verification scale division (e) or scale division (d) as appropriate. The values of (e) and (d) are chosen by the manufacturer and are marked on the device pursuant to S.6.3., except that d is not used in reference to an analog device, such as an equal-arm balance, where the graduations do not correspond to units of weight

B2: SCL-20.7 I Table 7. Maintenance Tolerances

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

Table 6. Maintenance Tolerances (All values in this table are in <u>verification</u> scale divisions)				
Tolerance in <u>Verification</u> Scale Divisions				
	1	2	3	5
Class	Test Load			
I	0 - 50 000	50 001 - 200 000	200 001 +	
II	0 - 5 000	5 001 - 20 000	20 001 +	
III	0 - 500	501 - 2 000	2 001 - 4 000	4 001 +
III L	0 - 50	51 - 200	201 - 400	401 +
III L	0 - 500	501 - 1 000	(Add 1 <u>d</u> <u>e</u> for each additional 500 <u>d</u> <u>e</u> or fraction thereof)	

B2: SCL-20.8 I Table 8. Recommended Minimum Load

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

Table 8. Recommended Minimum Load

Class	Value of Scale Division (d or e*)*	Recommended Minimum Load (d or e*)*
I	equal to or greater than 0.001 g	100
II	0.001 g to 0.05 g, inclusive	20
	equal to or greater than 0.1 g	50
III	All**	20
III L	All	50
IIIH	All	10

***For Class I and II devices equipped with auxiliary reading means (i.e., a rider, a vernier, or a least significant decimal differentiated by size, shape or color), the value of the verification scale division “e” is the value of the scale division immediately preceding the auxiliary means. For Class III and IIIH devices the value of “e” is specified by the manufacturer as marked on the device; “e” must be less than or equal to “d.” Scales manufacturers are permitted to design scales where the value a verification scale division e differs from the displayed scale division d. If the marked value of e is less than the value of d, use e in interpreting the Table. In all other cases use the value of d. Refer to marking requirements for d and e in footnotes 3 and 4 to Table S.6.3.a. and Table S.6.3.b.**

(Amended 20XX)

****A minimum load of 10 d e is recommended for a weight classifier marked in accordance with a statement identifying its use for special applications.**

(Amended 1990) **(Amended 20XX)**

Background/Discussion:

These items have been assigned to the Verification Scale Division (e) Task Group for further development. For more information or to provide comment, please contact the Task Group Chair:

Mr. Doug Musick
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(785) 564-6681, doug.musick@ks.gov

Most scales under the Scales Code are designated by the manufacturer to have a value of e that equals d. Where e and d are not equal, there has been confusion in interpreting the Scales Code since the Code was adopted in 1984 (taking effect in 1986). This confusion came to the forefront with the needs arising from the cannabis trade. Mr. Musick believes that there were errors in translating OIML R76 (the basis of the current Scales Code) to NIST HB44 format, there were key issues that were lost in translation, and finally there is misunderstanding of the NIST HB44 Code that contributed to this confusion. My proposal will seek to identify the sources of confusion and offer revisions to make correction.

In this discussion I will be using the OIML term instrument when referencing a complete scale or weighing system. This eliminated the dual meaning of the term “device.” A device will only refer to functioning parts of an instrument. Finally, the term “scale” will not be a weighing instrument. Scale will refer only to the measurement scale, i.e. analog graduations or digital divisions.

1. Determining Error in Verification

GEN-20.1.

In 2017, item 3200-7, a proposal to revise the expression of tolerances in several codes, was considered and withdrawn by the S&T Committee. The proposal aimed to correct the missing reference in those codes to errors of overregistration and underregistration. It also included a change to the definition of overregistration and underregistration that was prompted in part to a lack of understanding of the process of verification. Many of the comments received indicated that it was better handled through training. Additionally, the NCWM is working on the issue of alternative test methods which directly impacts the subject of verification. In reviewing the 2017 proposal

again, I believe the real problem is a misunderstanding of the process of verification itself, stemming from a missing definition for “True Value.”

The new definition and changes to the General Code correct deficiencies in the code. The “true value” has never been clearly defined in code although it may be inferred from the definitions. The concept of true value is essential to understanding verification process as it is used throughout the Handbook. It is also a legal issue establishing the basis for tolerance decisions with the uncertain test procedure clearly stated. Our decisions are based on the true value derived from a traceable standard and not based on the standard itself. Once established, the true value is considered to have no error for purposes of legal verification. In our tests, the uncertainties in the test procedure are unquantified. If you have to defend your test in court and are asked about the uncertainty in your test, what will you answer? With the addition of the True Value definition, you have a traceable test report for your standard and the text of G-T.3. regarding the legality of the specified test procedure. The verification process formally addresses the risks in two ways. First the risks are kept small by the standard and procedure specified. Second, the risks are shared equally between buyers and sellers. The enhancements explain clearly how errors are computed and how they are interpreted.

The addition of a % error definition in G-T.3. corrects a deficiency that was identified in testing LMD’s. The tolerances in the LMD codes are expressed using errors of overregistration/underregistration (device indication – true value). Yet we in the U.S. traditionally calculate those errors as errors of excess/deficiency (true value – device indication). When calculating % error in these calculations, it seemed appropriate to put the device indication in the denominator, but this is incorrect. All error calculations must be in terms of the true value, especially % calculations.

SCL-20.1

The addition of the Note addresses the issue of digital rounding. Parallel to R 76, the note requires errors to be determined to a resolution of at least 0.2 e. Remember that error = indication – true value, and the true value is normally the nominal value of the test weight. That means determining the indication to a resolution of 0.2 e or finer using error weights or other means when $e \geq 2d$, or by directly reading the indications when $e \geq 5d$. This means if $e = 5d$ or $e = 10d$, the indication is resolved fine enough to reduce the rounding error. In R76, the requirement is to “eliminate” rounding error, but this is not possible. You can only reduce it to 0.5 of whatever division size you resolve the indication. Hence, the proposal uses the term “reduce” instead of “eliminate.” The waiver allows field inspectors to continue to use direct reading when $e = d$, with a resulting rounding error of 0.5 e. This accepts the additional risk of passing devices outside the tolerances. (See Section 4 of the proposal.)

The changes to the two Scales Code tolerance paragraphs create a specific reference to the type of error in G-T.3. In this case it formally states errors are errors of overregistration/underregistration. The other change in T.1.1. addresses the missing part about applying tolerances to net values as well as gross values for unmarked scales. I believe this was just an oversight in 1984, as applying tolerances to either gross or net loads had been the established practice long before the 1984 changes to the Scales Code.

2. Correct Code references to ensure correct reference to either e or d, as appropriate

SCL-20.2

Section S.1.2.2. is not dealing with the verification scale division e as the title implies. Instead it is dealing with special requirements for instruments designed such that e does not equal d.

Section S.1.2.2.2. is not a specification issue directed to the manufacturer but rather a question of suitability. It should have been put into the User Requirements section 1. Selection Requirements. For a discussion of the option to delete this refer to part 4 of the proposal.

SCL-20.3

The correct value for the table is e. The use of d in the formulas only works when $e = d$. That is addressed in the note * below, which is not necessary when e is used in the formulas.

SCL-20.4

- The inclusion of references to d in the header to column 2 of the table is technically incorrect. The verification scale division must refer only to e.
- The change to Note 1 serves to eliminate the confusion about considering e to be the digit to the left of d, and ensures the e value comes from the markings on the device. It is the manufacturer who chooses e for classification purposes.
- The changes to Note 3 correctly reference the verification scale division e and not the scale division d, and they clean up some grammatical errors.

SCL-20.5

The change clarifies that the verification scale division is equal to the marked d when no separate marking of e is provided. Note that nothing in Note 3 prevents marking $d = 1 \text{ g}$ $e = 1 \text{ g}$, or capacity $10000 \text{ g} \times 1 \text{ g}$ $e = 1 \text{ g}$. The change to the last sentence cleans up a nonsensical term “weight unit.” The scale division must be in a unit of weight, e.g., g, kg, lb, etc. The intent was to have each range of a multi-range device include a capacity and division size n. Note R76 requires marking of Class, Max (capacity), and e, with a marking of d is only required when $e < d$.

SCL-20.6

The change to T.N.1.1.2. corrects the contradiction between the current code using d and the definition using e in determining accuracy class. The value of n in the definitions already correctly refers to e.

The change to T.N.1.1.3. is an attempt to clarify (e) and (d) similar to R 76 in Table 2. Note that when $e=d$, under S.6.3. only one marking is required. It is only when $e \neq d$ that S.6.3. requires both to be marked. The addition of material for ungraduated analog devices is housekeeping since d has no meaning for these devices. The change also clarifies that some requirements are directed to d (functional requirements on the device) and some to e (relating to classification and tolerance values).

3. Discuss issues of suitability of scales when e and d are not equalSCL-20.7

It is the value of e that is used in specifying tolerances according to the definition of e, and all values in this table must be expressed in terms of e. The table is currently written in terms of the scale division d, which is technically incorrect.

SCL-20.8

The parenthetical (d or e) in the headers to columns 2 and 3 is confusing when the two are not equal. Which one do you use? The note may address Class I and II devices, but it does not help with weight classifiers in Classes III and IIII, where you certainly don’t want to use d.

It is vital to note that for instruments under R76 the manufacturer is required to mark a minimum load (Min). The manufacturer calculates Min using e. However, the minimum load is marked in mass units matching the instrument display in divisions of d. There is no confusion since it is marked on the instrument. In NIST HB44 the inspector must determine the minimum load from Table 8 and the scale markings. Most users don’t even know this requirement exists, unless told by the inspector.

Table 8 is addressing the large significance of rounding error at small loads. The table must be clear to ensure the correct scale division is used in enforcement. The table at right shows the relative errors resulting from roundoff to the nearest scale division d at various loads in the table. In principle, we are trying to ensure loads weighed are sufficient to reduce the relative errors to the levels shown, i.e., for Class I – 0.5%, for Class II – 1.0%, Class III – 1.0%, for Class III – 2.5%, and Class IIII – 5%. While these might seem large initially, there is a diminishing returns effect. A small percentage of a small number tends to be insignificant. Because the value of commodities goes up as the accuracy goes up, we have more stringent requirements on Classes I and II.

Load d	Relative Error
10	5.0%
20	2.5%
50	1.0%
100	0.5%

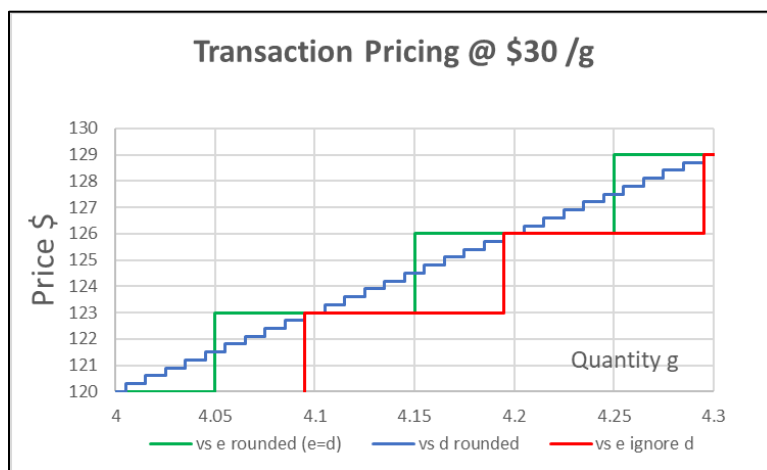
Scales fall into three categories, i.e., with $e > d$, $e = d$, and $e < d$.

- If $e < d$, e.g., weight classifiers, it seems clear the appropriate choice is e . The table in the second note specifies d , which is technically incorrect. For example, a Class III weight classifier with $d = 50$ g $e = 1$ g, the relative accuracy of 5% is reached at 10 e . At 10 d or (500 e) the relative error due to rounding is 0.1%.
- If $e = d$, it doesn't matter.
- If $e > d$, on some Class I and II scales, you get the desired relative error when you use d . If you use e , the scale with $e \neq d$ will result in much smaller rounding error since the rounding is internally applied to d and not to e . Examples: If $e = 0.1$ g, then 50 e is 5 g and the rounding error is $0.5 e / 50 e = 1\%$, i.e., the desired level for Class II. If $e = 0.1$ g and $d = 0.01$ g, then 50 e is 5 g and the rounding is to $0.5 d$ or $0.05 e$, thus the rounding error is $0.05 e / 50 e = 0.1\%$. This may be why the parenthetical (d or e) is used in the current language. Perhaps it was intended that we use the smaller value of the two if e and d are different. The proposal states e is used in cases where $e < d$ and d is used in all other cases. This eliminates any confusion. We may consider adding a marking of Min as per R76 as a future idea.

The change to the * note performs a similar function to the change in Note 1 in Table 3, as it disconnects e from d and relies solely on the markings of d and e .

In 2017, the NCWM added S.1.2.2.2. to prohibit use of Class I and II scales with a differentiated scale division. One argument was that the differentiated digit would cause confusion. There were arguments in opposition to the proposal. I argued that the confusion rested mostly with the weights and measures community (see earlier discussion). Plus, the finer digit extended the usable range of the scale since you could reach the 1 % limit to rounding error at 50 d . For a Class II scale with $e = 0.1$ g and $d = 0.01$ g, that means weighing small loads down to 0.5 g loads which is something that users need in the cannabis trade.

One issue involves the rounding errors addressed in Table 8. A more critical issue in my view is the pricing increments. At \$30/g, 0.1 g e represents a pricing increment of \$3. By displaying 0.01 g d , that 0.01 g d reduces the price increment to \$0.30. This is displayed in the graph at right. The blue line shows the 30 cent steps if you use the differentiated d . If you use the digit to the left of the differentiated d , you see the counted divisions e discussed earlier. The gap between the blue and red lines show the losses to users if they are forced to round down. The green line shows pricing on a normally rounded scale with 0.1 g e . The normal rounding shares the risk equally between buyer and seller.



If the user must have a scale with $e = d$, then it forces them to go to 0.01 g e to service loads at the 1 g level. For that scale 50 e is 0.5 g, and the 1 g loads weighed are near 100 e . Precision scales rarely use 2 or 5 divisions, so capacities get reduced by a factor of 10 to move down to the next smaller division size. Blocking the use of $e=10d$ may force many users to purchase two scales where a single scale would have been suitable if using a scale with a differentiated d were not blocked.

4. Discussion regarding disconnecting e from d

Sections in the current Scales Code are being incorrectly interpreted to imply there is a direct connection between e and d . Essentially there is a belief when inspecting Class II scales when e does not equal d that we are somehow

verifying the first digit to the left of d. Even when $e = d$, there is a belief that we are verifying d. That fails to follow the principles incorporated in G-T.3. We are not verifying the division; we are verifying the entire instrument indication at an applied load.

The scale division d is defined as the smallest division of the instrument under test (IUT). The scale division is referred to extensively in the code and we find that requirements written around d regulate the operating characteristics of the instrument, e.g., discrimination. When reading analog indications, we round to the nearest graduation (See Appendix A. Section 10). Under General Code G-S.5.2.2. (d), there is an important requirement that the smallest division of any digital device round off. Unless specifically designated the instruments in NIST HB44 are in “normal rounding” class of instruments. Even with normal rounding, it is critical to understand that the digits to the left of the least significant digits are not rounded. They are counted. For example, as you count the rounded-off d's, when you increment from 9 to 0 in the least significant digit, the next digit increments 1 digit. The break point between digits to left of the least significant digit always occurs at 9.5 d. If d is 1 g, then the tenth d is counted as 10 g and the 100th d is counted as 100 g, etc. Normal rounding of the tens place would normally occur at 5.0 d. If you attempt to apply tolerances to e and just ignore d, you are not rounding in conformance to G-S.5.2.2. (d). Instead, you are rounding down, which places the scale user at a disadvantage and disrupts equity.

UR.3.10. addresses dynamic monorail scales, which also have $e \neq d$, and requires that the commercial transaction using these devices shall be based on e, interpreted to mean the digit to the left of the differentiated d. These transactions therefore must be based on a counting scale (rounding down) instead of a half-up/half-down system as required in G-S.5.2.2. (d). When applied to a high-priced commodity at \$30 /g, the pricing errors add up because the scale user is forced to always round down. The table at right shows the impact, and this impact can be attributed to every transaction. At \$30/g, the average loss to the user per transaction is \$1.35. That is not equity!

Indication	\$ Using d	\$ Using e	\$ gain/loss
0.95	\$28.50	\$27.00	-\$1.50
0.96	\$28.80	\$27.00	-\$1.80
0.97	\$29.10	\$27.00	-\$2.10
0.98	\$29.40	\$27.00	-\$2.40
0.99	\$29.70	\$27.00	-\$2.70
1.00	\$30.00	\$30.00	\$0.00
1.01	\$30.30	\$30.00	-\$0.30
1.02	\$30.60	\$30.00	-\$0.60
1.03	\$30.90	\$30.00	-\$0.90
1.04	\$31.20	\$30.00	-\$1.20
1.05	\$31.50	\$30.00	-\$1.50

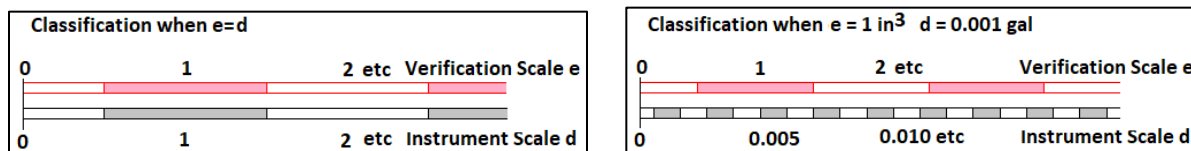
Verifying a scale division is virtually impossible. For a Class II device the accuracy requirement is approximately 0.01% of applied load. If the division is 0.1 g, then the required accuracy is ± 0.00001 g and we are trying to measure that with a resolution of 0.1 g. In addition, we don't have standards below 1 mg.

I contend that e is not the digit to the left of the differentiated d! Nor do we verify e. Careful reading of the definition of the verification scale division “e” in Appendix D will reveal no direct connection between e and the indications on the instrument being verified. The verification scale division is a mass (weight) value declared by the manufacturer in required markings that is used in classifying instruments and in specifying tolerances for the device. In the header to column 2 in Table 3., we find the expression “Verification Scale Divisions (d or e¹)”. This is another chance to misunderstand the Code. The verification scale division must be e according to the definition. It can't be d, although it can have the same value as d. Similarly, reading Note 1 in Table 3, you might conclude that e is the value of the digit immediately to the left of d. The critical distinction is that e is a value of that digit and not the actual division of the display. To avoid confusion, I propose amending Table 3. to simply direct you to the scale markings to find e and remove any reference to the digit in the display.

The e value is also used in classifying instruments in the Scales Code. Classes refer to relative error ranges. This comes from the ratio MTol / e. At the second step in the tolerance structure in Table 6. under NIST HB44 a Class III instrument is ~0.1% accurate. This is 2 e tolerance for a load of 2,000 e. A Class II instrument is accurate to ~0.01 %, or 2 e error for a load of 20,000 e. However, the tolerances within a class are stepped, such that the % error varies through the operating range. For Class II the relative errors are 0.02% at 5,000 e, 0.01% at 20,000 e and 0.0033% at 100,000 e. The manufacturer decides what class and relative accuracy he needs to serve (based on capacity and n) and designs accordingly.

If e is not a division on the instrument, what is it? In R76, the basis of our current Scales Code, the term “scale” is not used to refer to a weighing instrument, but rather the graduations or divisions, i.e., the “scale” of indication. Thus,

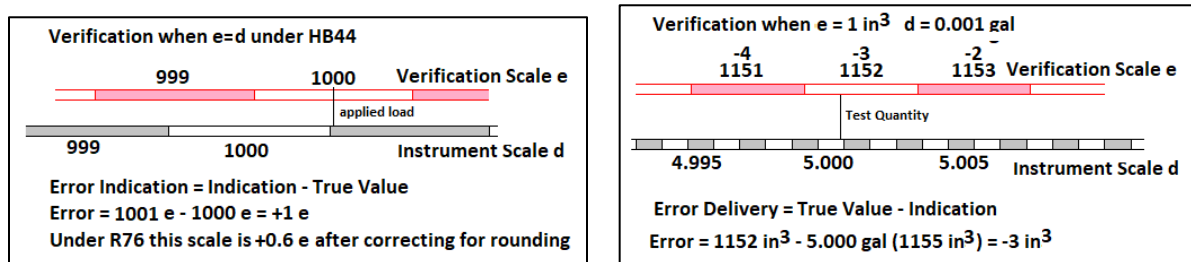
a scale division is not limited to weighing devices. A register on an LMD has a “scale division,” e.g., a RMFD typically indicates in 0.001 gal divisions of scale. It should be easy to see the 0.001 gal increments correspond to d in the Scales Code. When we verify the RMFD, we use a test measure with an independent scale, either 1 in³ for older measures and 0.5 in³ for newer measures. The “verification scale” for the RMFD is therefore the “scale” on the test measure used to determine the true value. The instrument scale and the verification scale connect at only one point, at ZERO! Error arises when the two scale diverge as you move along the measurement scale due to linearity errors, influence factors, random variations, etc., within the instrument. The Verification Scale is considered to have no error.



Above at left, the graphic shows a case where $e = d$. Notice how the divisions d and e both begin at center zero and the divisions align perfectly because at this magnification it is impossible to see small differences. The test evaluates the sum of many divisions in order to see any deviation. Above at right, the graphic shows how the 1 in³ e for the RMFD verification aligns with the 0.001 gal d of the instrument. Now imagine what happens when a test is performed.

Classification is based on relative error. This allows the verification scale division to differ from the instrument scale division, sometimes larger and sometimes smaller. With the RMFD above right, d is significantly smaller than e . In fact, the 6 e maintenance tolerance is 25 d . The two scales are independent. Would anyone suggest that the d smaller than e is inappropriate for commercial use. We verify the RMFD to e just like the weighing instrument with $e = 10 d$. The confusion comes from the requirement to differentiate d on these instruments.

Why does the Code require d to be differentiated when d is smaller than e ? That is the critical question. It is not because d is somehow inaccurate or unreliable. It is not because d is smaller than the e of the tolerances. I believe it is because the code wanted to ensure that the serviceperson or official did not use d for tolerance calculations. It had nothing to do with users or customers.



In the above graphics, the instrument scale diverges from the verification scale. They both started at the same zero reference. Notice that the RMFD at right calculates delivery error vs indication error at left. The key is to understand that the verification scale has no error and we are measuring the deviation of the instrument scale from the verification scale.

This pattern holds true for other verification tests, from tests of packaged goods with a reference scale to tests of taximeters on a road course. Circling back to the proposed definition of true value, in addition to its use in classifying scales, **the verification scale is that “scale” used to measure the true value. The division of that “true value” measurement scale is “e.”** With the new G-T.3. that true value is the legal basis of our tests and is known without uncertainty. A table of a variety of verifications and their d and e scales are provided below.

Instrument & quantity	Instrument scale division d	Verification scale division e	Maintenance Tolerance	Ratio MT/ e
RMFD @ 5 gal	0.001 gal	1 in ³ 0.5 in ³	6 in ³	6 12

VTM @ 100 gal	0.1 gal	5 in ³	~70 in ³	14
Rack @ 1,000gal	1 gal	0.1 gal	3 gal	30
Mass Flow Class 0.3	<= 0.2% MMQ	<= 0.02%	0.3%	15
Taximeter @ 1 mi	0.2 mi	~0.001 mi (!5 ft)	+0.01/-0.04 mi	10/40
Package Checking @ 1 lb @ 4 oz	N/A	<= 0.005 lb	0.044 lb	8.8
	N/A	<= 0.002 lb	0.016 lb	8
III scale e = d @ 200 d	1 d	1 e = 1 d	2 e	2
III scale e = d @ 2,000 d	1 d	1 e = 1 d	2 e	2
II scale e = d @ 20,000 d	1 d	1 e = 1 d	2 e	2
II scale e = 10 d @ 20,000 e	1 d	1 e = 10 d	2 e	2

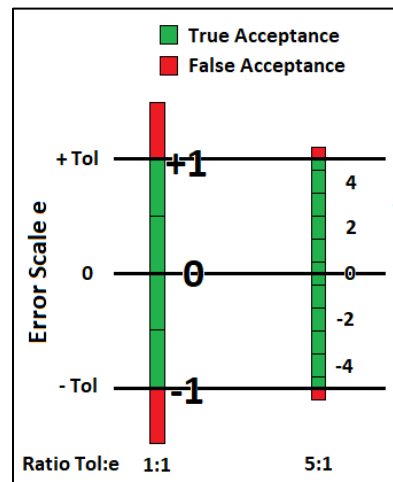
The last column of the table is the real focus of verification. We want to have sufficient resolution in determining errors. Although the issue is a bit more complicated, this ratio is a measure of the effectiveness of the verification. Special notes:

- For the RMFD, VTM, and Rack instruments the ratio is limited by HB105-3 and the specified minimum division of the prover scale. This becomes part of the code when you specify the prover must meet that specification.
- For the mass flow instruments the Notes provide no guidance on the verification scale division. I submit the value of resolution in error should be in NIST HB44 Notes for all Codes, similar to R76 for weighing instruments. This is something I hope the WG on alternative test methods addresses. The EPO does specify the reference scale division be no larger than 1/10 of the smallest tolerance applied. This means the Mass Flow code requires a minimum ratio of 15:1 for maintenance tolerance which I believe is overkill and very costly. Compare to 5:1 elsewhere.
- For scales the ratio is only 2:1 as currently written in NIST Handbook 44. There is no mention of error weights in the Code. In R76, the ratio is specified in that it requires errors to be determined to at least 0.2 e. This produces a ratio of 5:1 in the first step, 10:1 in step two and 15:1 in step three. If you determine errors to 0.1 e, as we do normally with error weights, it allows you to double those ratios and provide 10:1 in the first step. Reading the errors in d when e = 5 d or e = 10d, allows you to meet the minimum without using error weights (or expanded resolution).

Why use maintenance tolerance in computing this ratio? In verification, there is a shift in emphasis relative to calibration. In verification, your primary concern is with the population. You want all the devices in the same commercial field to have performance that is similar enough to promote equity. Even if you are little sloppy in applying acceptance tolerance, the instrument is highly likely to perform within maintenance tolerances. In calibration, the focus is always on a single artifact or instrument.

Why is this resolution in determining errors important? The short answer is to reduce the incidence of false acceptance/rejection. The Range of False Acceptance (RFA) can be defined as the portion of the compliant measured error that reaches outside the tolerance limits due to rounding in the error calculation. Limiting the RFA is the objective in specifying the resolution of errors.

When we use direct reading in testing weighing instruments the ratio of Tol:e in the first tolerance step is 1:1 and we have an RFA of $\frac{1}{2} e$ in proportion to the 1 e tolerance. The RFA is 50% of the tolerance, meaning we can accept instruments in error up to 1.5 times the tolerance. When we add the R76 requirement to measure errors to 0.2 e we increase the ratio of Tol:e to 5:1 and thereby reduce the RFA to 0.1 e in proportion to the 1 e maintenance tolerance (see graphic at right). This RFA is only 10% of the tolerance. Statistically, it can be shown that the RFA contributes to the population variability based on the Root Sum Square. At $\frac{1}{2} e$ RFA when Tol:e is 1:1, the population variability gets increased by 22%. When we increase the Tol:e ratio to 5:1 the population variation is only increased by 1%, which is not considered significant.



A better way to express this in is terms of compliance rate. Imagine your test data shows compliance of a class of devices as 95% at 1 e tolerance, but you are testing using direct reading. Due to rounding in measuring the error that you are not addressing, 95 % of the instruments are actually within 1.22 e and not the 1.00 e indicated in the compliance data. By increasing the Tol:e ratio to 5:1, 95% of the instruments are accurate within 1.01 e.

At the 2020 NCWM Interim Meeting, the Committee acknowledged written comments from the submitter and heard comments during the Open Hearing session on this item. Mr. Constantine Cotsoradis (Flint Hills Resources) and Mr. Russ Vires (SMA) representing interests from an industry perspective questioned the need for the changes being proposed in this block of items. Additional comments from regulatory officials indicated that the changes included in this proposal were not successful in clarifying NIST HB 44 requirements and possibly added to the confusion that already exists. Mr. Steve Cook (California, retired) pointed out that the changes ignored weighing devices that did not fall under Accuracy Class I or II and stated his willingness to work with the submitter to further develop the proposal.

Several other comments heard during Open Hearings indicated that it is questionable to include all of the individual items that are shown as part of Block 2. Comments from SMA and some regulatory officials recommended that this Block of items be separated since not all items now grouped under Block 2 seem to be closely related. Mr. Kurt Floren (Los Angeles County, California) also pointed out that some of the proposed amended language is not clear and will add to confusion in interpretation of requirements and that there are some editorial corrections and proper formatting needed in this proposal as well.

NIST OWM commented that while most of the proposed changes seem to be fundamentally sound, the urgent need to implement some of those proposed changes is not clear. NIST OWM also agreed with other comments that recommend separating the items under Block 2 into individual items or grouped together where items are more clearly related. NIST OWM notes that item SCL-20.2 now included in Block 2 is clearly related to two other items individually listed on the S&T Committee's agenda; SCL-20.10 and SCL-20.11. Additionally, NIST OWM believes that the determination if individual Scales Code requirements are meant to apply to either "e" or "d" should be carefully considered on a case-by-case basis. Also recommended was that additional input be solicited from stakeholders (industry officials and device manufacturers in particular) prior to adopting any changes based on this proposal.

During the Committee's work session, members of the Committee agreed that some of the items combined under Block 2 should be separated. The Committee agreed that items GEN-20.1, SCL-20.1, and SCL-20.2 should be removed from Block 2 and given individual consideration. Considering items individually, the Committee agreed to the following:

- Item GEN-20.1: The Committee acknowledged the receipt of comments from some of the regional associations concerning the use of the term "True Value" in the formulas included in parts (a) & (b) and how it is defined in the proposal. The Committee agreed that there may be value in further defining the application of tolerance and that the item should be given a Developing status adding that consideration should be given to amending the use of the term "True Value."

- Item SCL-20.1: There were no direct comments regarding this item during Open Hearings. The Committee reviewed NIST OWM’s analysis on this item and agreed it should be withdrawn noting this proposed change is unnecessary.
- Item SCL-20.2: During Open Hearings this item was discussed relative to items SCL-20.10 and SCL-20.11 which address the same issue. Most comments received were in favor of option 2 in this proposal which was effectively the same as SCL-20.10. The Committee agreed this item should also be withdrawn.
- Items SCL-20.3: The Committee agreed items SCL-20.4, SCL-20.5, SCL-20.6, SCL-20.7, and SCL-20.8 should be grouped together as Block 2 and given an Assigned status.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items, including this block of items, were addressed in the subsequent 2021 NCWM Interim Meeting.

At the 2021 NCWM Interim Meeting, the Committee heard comments on this block of items during the Open Hearing session including the following.

Mr. John Barton (NIST OWM), after making known his NIST Technical Advisor role to the Task Group (TG), reported that the group had met on several occasions over the past 4 months to deliberate on the issues involved in this proposal. While the TG came to conclusions that are included in its final report, there had been other individuals and groups that came to different conclusions on several issues. Those other individuals and groups included subject matter experts, NTEP evaluators, scale manufacturers, and the NTEP Weighing Sector. Mr. Barton further stated that given the impact of changes proposed in this item, it may be wise to include additional sources of input prior to adopting the recommended changes.

Mr. Barton also noted that the Committee set a date of November 15, 2023, for the TG to return its conclusions and finalized its work in a matter of 4 months rather than using the 3 years granted. It is also significant to note that the TG requested an Informational status for this item as opposed to a Voting status. This suggests that members of the TG are open to the notion that the proposal could be vetted further even when they have generated a “final” report on their work.

Mr. Henry Opperman (Weights and Measures Consulting) referred to the written comments he submitted to the Committee prior to this meeting and stated that all individual items in this Block should be withdrawn. Mr. Opperman stated that the proposals in this Block are based on false premises and, therefore, should not be adopted. Mr. Alan Walker (Florida) agreed with Mr. Opperman and stated this proposal should be withdrawn.

During the Committee’s work session, the Committee considered updating the charge of the TG by directing the TG to specifically identify each change recommended in its final report to actual changes proposed as amendments in NIST HB 44. The Committee also recommended this remains an assigned block of items.

At the 2021 NCWM Annual Meeting, Mr. Doug Musick (Kansas) shared recommendations and requested an Informational status for Item Block 2 so that it will be reviewed by the different regional associations. Mr. Musick noted that the Item Under Consideration provided in Publication 16 did not reflect the most recent submission. It was mentioned that both Mr. Musick and Mr. Ross Anderson (New York, retired) sent updates for this item. The TG asked that this item be moved to Informational status.

During the Committee’s work session, the Committee agreed to make this item Informational based on comments received during the Open Hearings.

Regional Association Reporting:

(References to “Committee” in this section (titled “Regional Association Reporting”) without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, Mr. Kurt Floren (Los Angeles County, California) stated that footnote 1 under Table 3 in item SCL-4 should have the words “be” and “to” stricken to correct grammatical errors. Mr. Kevin Merritt (Idaho) stated that the term “certified” as used in the proposed new language being recommended under item SCL-20.1 for Scales Code paragraph T.1. General, should be clarified/defined. He suggested the replacement of “certified” test load with language more in line with NIST traceable standards.

Regarding item SCL-20.2, Mr. Steve Harrington (Oregon) commented that he still believes there is merit in the proposed changes but suggested removing the retroactive date to allow devices now in service to remain in service. Mr. Vires, speaking on behalf of the SMA, provided some history of the use of both “d” and “e” for scales and that field inspectors did not have the appropriate test weight to properly test these scales to the finest resolution. While supported initially by the SMA, it was not realized that this proposal would have unintended consequences related to the jewelry industry where “d” is commonly used in weight determinations. The SMA recommends that the retroactive date be eliminated to allow manufactures additional time to change the designs on their equipment and so existing scales can continue to be used. Mr. Vires also suggested that this requirement could be formatted as a user requirement.

Mr. Barton stated that the exclusion of jeweler’s scales in this requirement could provide reason to exclude other applications and this may be a “slippery slope.”

Mr. Harrington stated that he could also support the proposal formatted as a user requirement.

The Committee agreed that SCL-20.2 does not address any known significant issues and has the potential to create additional confusion. The Committee agrees that the changes proposed are unnecessary and that the item should be Withdrawn.

At the SWMA 2019 Annual Meeting, Ms. Diane Lee (NIST OWM) expressed concern about whether “True Value” is the appropriate term to be used in this item. Mr. Tim Chesser (Arkansas) stated that he doesn’t like the “True Value” language. Mr. Vires stated that the Scale Manufacturer’s Association has not met on this issue. Mr. Steve Benjamin (North Carolina) also pointed out two typographical errors. On page 7, lines 12 and 17, the “(+)” next to “Minus” should be changed to “(-)”. The Committee would like more input from other regions on this item and recommended that it be a Developing item.

At the NEWMA 2019 Interim Meeting, the Committee agreed with the body that the item has merit and should be assigned a Developing status. No comments were heard during Open Hearings.

At the CWMA 2019 Interim Meeting, comments were received in support of these items. There was concern that the definition for “true value” may not be appropriate. There are some other editorial issues that need to be addressed including footnote 1 in Table 3. The use of the term verification scale division in Table 6 may also be confusing in instances when the division in use is not the value specified by the manufacturer.

At the 2020 WWMA Annual Meeting, the WWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 SWMA Annual Meeting, the SWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 NEWMA Annual Meeting, the NEWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

During the 2020 Interim Meeting, the CWMA S&T Committee heard testimony from Mr. Musick (Kansas and Chair of the Task Group assigned to this item) who provided an update on the TG’s progress. The CWMA S&T Committee agreed to recommend this item be retained as an Assigned item.

During the 2021 NEWMA Annual Meeting, comments were received on the entire block: updates were received from Mr. Barton on the progress of the Task Group. Work is currently being performed by the task group and changes will

be presented at the NCWM Annual meeting. Mr. Russ Vires (SMA representative) supported the future development of this item. Comments were heard from Mr. Anderson that there are additional pieces of this item that have been removed from the block but are no less important. The NEWMA S&T Committee recommends that this item remain with Assigned status.

At the 2021 Annual CWMA, the S&T Committee heard from Mr. Charlie Stutesman (Kansas) who gave an update on the item and asked for additional info from the task group. Mr. Musick provided updates from the task group and will be providing changes to the item to NCWM S&T Committee before the July Annual meeting. Mr. Barton agreed with the direction of the task group and reported that comments have been received. Mr. Russ stated that SMA met April 22 and supports work of the task group. The group supports continued efforts on the verification interval for "e" and scale division for "d". Mr. Loren Minnich (Kansas) suggested that the Block be renamed to "Verification Scale Division (e)" as the existing title is for an item that has been withdrawn. The CWMA S&T Committee recommends that this item remain an Assigned item.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

ITEM BLOCK 3 (B3) TOLERANCES FOR DISTANCE TESTING IN TAXIMETERS AND TRANSPORTATION NETWORK SYSTEMS

B3: TXI-20.1 D T. Tolerances
B3: TNS-20.1 D T. Tolerances

Source:

New York Department of Agriculture and Markets

Purpose:

Provide the same distance-measurement tolerances for the Taximeters Code and Transportation Network Systems Code.

B3: TXI-20.1 D T. Tolerances

Item Under Consideration:

Amend NIST Handbook 44, Taximeters Code as follows:

T. Tolerances

T.1. Tolerance Values.

T.1.1. On Distance Tests. – Maintenance and acceptance tolerances for taximeters shall be as follows:

- (a) On Overregistration: 1 % of the interval under test **when the distance is 1.6 km (1 mile) or less, 2.5 % of the interval under test when the distance is greater than 1.6 km (1 mile).**

B3: TNS-20.1 D T. Tolerances

Item Under Consideration:

Amend NIST Handbook 44, Transportation Network Systems Code as follows:

T. Tolerances

T.1.1.1. Distance Tests. – Maintenance and acceptance tolerances shall be as follows:

- (a) On Overregistration: ~~2.5%~~ **1 % of the interval under test when the distance is 1.6 km (1 mile) or less, 2.5 % of the interval under test when the distance is greater than 1.6 km (1 mile).**
- (b) On Underregistration: ~~2.5 %~~ **4 % of the interval under test.**

Background/Discussion:

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Mr. Jim Willis
New York Department of Agriculture and Markets
(518) 485-8377, james.willis@agriculture.ny.gov

Taximeter manufacturers are submitting devices identical to the devices in the Transportation Network Measurement Systems code; however, they are faced with a tighter tolerance for over-registration. Both devices are typically computer pads or cell phones. Taximeter companies want to take advantage of some of the same technology used by TNMS companies, however, the tolerance for taximeters is much tighter than the tolerance for TNMS meters. During type evaluation, it is common to drive more than 1 mile to incorporate tunnels and valley effect. If the same tolerance was applied, taximeters would have the same chance of passing as TNMS meters.

Some jurisdictions that test taximeters may not want the tolerance for a 1-mile course to be raised given the good history of their test programs. This is the reason I am proposing maintaining the 1 % tolerance at 1 mile or less.

Some TNMS companies may be concerned that their device will not pass a 1 % tolerance, but we believe that on a straight, 1-mile course, devices operating properly should have no problem passing.

During the 2020 NCWM Interim Meeting Open Hearings the Committee heard from NIST OWM explaining that the proposal is not technically correct by inserting language that refers to “intervals” in the tentative NIST HB 44 TNMS Code. These types of systems do not calculate a charge for fare using intervals (i.e., segments) of the total travel in a trip as do taximeters. TNMS calculate fare charges based on the entire distance/time in a trip. Additionally, these two different systems (taximeters and TNMS) are becoming more similar and the differences that were used to distinguish them from one another are beginning to fade. NIST OWM noted there is a need for the USNWG on Taximeters that developed the tentative TNMS Code to meet and discuss the potential of a merger of these two NIST HB 44 Codes. Mr. Kurt Floren (Los Angeles County, California) pointed out that taximeters have been and still are meeting existing tolerances and therefore he questions the need to expand those tolerance values.

Mr. Stan Toy (Santa Clara County, California) expressed his belief that the tolerances for taximeters do not need to be expanded and that this item should be withdrawn. Mr. Jim Willis (New York) pointed out that New York Weights and Measures has issued its own type approval for taximeters that use location services, such as GPS to measure distance. He stated further that New York would support a Developing or Assigned status.

During the Committee’s work session, it was agreed to assign a Developing status with the understanding the USNWG on Taximeters has offered to assist the submitter in further development of the proposal.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items, this item included, were addressed in the subsequent 2021 NCWM Interim Meeting.

During the 2021 NCWM Interim Meeting Open Hearing session, Mr. John Barton (NIST OWM) stated that OWM noted issues of concern in this proposal during the 2020 NCWM Interim Meeting regarding how tolerances are applied to taximeters in contrast to how they are applied to TNMS. This proposal does not seem to recognize these differences. NIST OWM also notes the many opposing comments made pertaining to the increase of tolerances for taximeters which have complied with existing tolerances for decades. The NIST USNWG on Taximeters has been conducting

meetings with a goal of merging the NIST HB 44 Taximeters and TNMS Codes. This work will include a number of modifications to both codes that will affect the specifications, test procedures, user requirements, and possibly the tolerances. The USNWG has offered to work with the submitter of this proposal.

Mr. Willis (representing the submitter of this item) stated a willingness to work the USNWG on Taximeters.

During the Committee's work session, the members noted the submitter's willingness to work with the taximeter Work Group and agreed to maintain this item's Developing status.

At the 2021 Annual Meeting Open Hearing, the committee heard from Mr. Willis, who noted that these items were being discussed with the USNWG and that further information will be coming from this group.

At the Committee's work session, members of the Committee agreed to maintain the Developing status for this item.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, Mr. Barton stated that the effort to align the TNMS Code with the Taximeters Code is appreciated and expressed the desire to merge the two codes in the future. Mr. Kurt Floren (Los Angeles County, California) stated that he has concerns about the significant increase in the tolerance allowed for taximeters as proposed and that there is no data to support such a change. Mr. Clark Cooney (California) stated that he agrees with Mr. Floren and encourages further development of this proposal. Mr. Toy stated that he agrees with the previous comments heard and does not believe the tolerances for taximeters should be increased. The WWMA agrees that the item should be given a Developing status and that the submitter should work with the USNWG on Taximeters to incorporate the proposed changes into the appropriate NIST HB 44 Codes.

At the SWMA 2019 Annual Meeting, the SWMA heard no comments on this item. The SWMA decided not to make a recommendation.

At the NEWMA 2019 Interim Meeting, NEWMA's membership agreed that this item should be moved to voting status. During Open Hearings, Mr. Willis indicated that taximeters are currently being held to a tighter standard compared to TNS and this proposal will align the tolerances in both codes. Mr. John McGuire (New Jersey) and Mr. James Cassidy (Massachusetts), voiced support.

At the CWMA 2019 Interim Meeting, Mr. Loren Minnich (Kansas) commented that this would give taxi's the same tolerances as TNS. We recommend this item as a voting item.

At the 2020 WWMA, SWMA and NEWMA Annual Meetings, they adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 CWMA Annual Meeting, the CWMA heard from a single commenter, Mrs. Tina Butcher (NIST OWM). She gave an update of the work of the USNWG and requested these items remain as developing items. The CWMA agreed and recommends a Developing status.

At the 2021 NEWMA Annual Meeting, comments were received on the entire block. Mr. Barton commented on his recognition of the effort by the submitter to align tolerances between the two codes on transportation for hire systems but is not sure that tolerances can be applied in this manner. The USNWG is working towards uniformity and recommends a developing item or that the submitter withdraw and resubmit in the future. Mr. Cassidy spoke in support of the intent of this item to provide a level playing field and supports the development of this item. Mr. Willis (submitter) provided background information on this item and elaborated on the purpose and intent. He explained TNMS systems are being held to one tolerance but when TNMS system technology is used in taxi meters, they are held to tighter tolerances and can fail under test at values that would pass the TNMS tolerances. Mr. Cassidy again

expressed his desire for a level playing field and that both systems meet the same tolerances. NEWMA S&T Committee recommends this item with a Developing status.

At the 2021 CWMA Annual Meeting, Mr. Barton provided comments. It is not necessary to increase tolerances on taxi meters. The taxi meters have been meeting current tolerances for decades. This addresses transportation network systems primarily and adjustments to tolerances are being made to both device codes. The practice of measuring intervals for taximeters is not followed when measuring distances in TNS. The USNWG is looking at possibly combining Taximeters and TNS into a single code. In order for this item to move forward, it will need to be reworked. The submitter has agreed to work with the USNWG. The CWMA S&T Committee recommends that this item be withdrawn.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

ITEM BLOCK 4 (B4) ELECTRONICALLY CAPTURED TICKETS OR RECEIPTS

(Note: The item under consideration reflects changes that were received by the Committee from the submitter of the item and that the Committee agreed to during its 2021 NCWM Interim Meeting Work session)

B4: GEN-21.2	D	G-S.5.6. Recorded Representations
B4: LMD-21.2	D	S.1.6.5. Money Value Computations., UR.3. Use of a Device.
B4: VTM-21.1	D	S.1.1. Primary Elements., UR.2. User Requirements
B4: LPG-21.1	D	S.1.1. Primary Elements., UR.2. User Requirements
B4: CLM-21.1	D	S.1.4.1. Printed Ticket <u>Recorded Representation.</u> , UR.2.6.3. Printed Ticket <u>Recorded Representation.</u>
B4: MLK-XX.X	D	S.1.4.2 Printed Ticket <u>Recorded Representation.</u> , UR.2.2. Printed Ticket, <u>Recorded Representation.</u>
B4: MFM-21.2	D	S.6. Printer <u>Recorded Representations.</u> , UR.2.6. Ticket Printer, Customer Ticket, <u>Recorded Representation.</u> , UR.3.4. Printed Ticket. <u>Recorded Representation.</u>
B4: CDL-21.1	D	S.1.4.1. Printed Ticket <u>Recorded Representations.</u> , UR.2.4.2. Tickets or Invoices. <u>Recorded Representation.</u>
B4: HGM-21.1	D	S.2.6. Recorded Representations, Point of Sale Systems., S.6. Printer. Recording Element., UR.3.2. Vehicle-mounted Measuring Systems Ticket Printer Recording Element., UR.3.3. Printed Ticket. Recorded Representation.
B4: OTH-21.2	D	Appendix D - Definitions.: recorded representations, recording element.
B4: VTM-21.1	D	S.1.1. Primary Elements., UR.2. User Requirements
B4: LPG-21.1	D	S.1.1. Primary Elements., UR.2. User Requirements
B4: CLM-21.1	D	S.1.4.1. Printed Ticket <u>Recorded Representation.</u> , UR.2.6.3. Printed Ticket <u>Recorded Representation.</u>
B4: MFM-21.2	D	S.6. Printer <u>Recorded Representations.</u> , UR.2.6. Ticket Printer, Customer Ticket, <u>Recorded Representation.</u> , UR.3.4. Printed Ticket. <u>Recorded Representation.</u>
B4: CDL-21.1	D	S.1.4.1. Printed Ticket <u>Recorded Representations.</u> , UR.2.4.2. Tickets or Invoices. <u>Recorded Representation.</u>
B4: HGM-21.1	D	S.2.6. Recorded Representations, Point of Sale Systems., S.6. Printer. Recording Element., UR.3.2. Vehicle-mounted Measuring Systems Ticket Printer Recording Element., UR.3.3. Printed Ticket. Recorded Representation.
B4: OTH-21.2	D	Appendix D - Definitions.: recorded representations, recording element.

Source:

Kansas Department of Agriculture, Division of Weights and Measures

Purpose:

Allow recorded values to be captured electronically as an alternative to a printed ticket or receipt.

B4: GEN-21.2 D G-S.5.6. Recorded Representations.**Item Under Consideration:**

Amend NIST Handbook 44, General Code as follows:

G-S.5.6. Recorded Representations. – Insofar as they are appropriate, the requirements for indicating and recording elements shall also apply to recorded representations. All recorded values shall be ~~printed-provided presented~~ digitally. In applications where recorded representations are required by a specific code, the customer may be given the option of not receiving the recorded representation. Unless otherwise specified, recorded representations referenced in specific codes shall be made available to the customer as a minimum in hard copy form. However, ~~For~~ systems equipped with the capability of issuing an electronic receipt, ticket, or other recorded representation, the customer may be given the option to receive any required information electronically (e.g., via cell phone, computer, etc.) in lieu of or in addition to a hard copy.

(Amended 1975, 2014 and 20XX)

B4: LMD-21.2 D S.1.6.5. Money Value Computations., UR.3. Use of a Device.**Item Under Consideration:**

Amend NIST Handbook 44, Liquid Measuring Devices Code as follows:

S.1.6.5. Money-Value Computations

...

S.1.6.5.6. Display of Quantity and Total Price, Aviation Refueling Applications.

- (a) *The quantity shall be displayed throughout the transaction.*
- (b) *The total price shall also be displayed under one of the following conditions:*
 - (1) The total price can appear on the face of the dispenser or through a controller adjacent to the device.
 - (2) If a device is designed to continuously compute and display the total price, then the total price shall be computed and displayed throughout the transaction for the quantity delivered.
- (c) *The total price and quantity shall be displayed for at least five minutes or until the next transaction is initiated by using controls on the device or other customer-activated controls.*
- (d) *A ~~printed~~ receipt shall be available and shall include, at a minimum, the total price, quantity, and unit price.*

[Nonretroactive as of January 1, 2008]

(Added 2007) (Amended 20XX)

S.1.6.7. Recorded Representations. – *Except for fleet sales and other price contract sales and for transactions where a post-delivery discount is provided, a ~~printed~~ receipt providing the following information shall be available through a built-in or separate recording element for all transactions conducted with point-of-sale systems or devices activated by debit cards, credit cards, and/or cash:*

- (a) *the total volume of the delivery;**
- (b) *the unit price;**
- (c) *the total computed price;**

(d) *the product identity by name, symbol, abbreviation, or code number;* and*

(e) *the dispenser designation by either an alphabetical or numerical description.***

**[Nonretroactive as of January 1, 1986] **[Nonretroactive as of January 1, 2021]*

(Added 1985) (Amended 1997, 2012, 2014, 2018 and **20XX**)

S.1.6.8. Recorded Representations for Transactions Where a Post-Delivery Discount(s) is Provided.

–Except for fleet sales and other price contract sales, a **printed** receipt providing the following information shall be available through a built-in or separate recording element that is part of the system for transactions involving a post-delivery discount:

(a) the product identity by name, symbol, abbreviation, or code number;

(b) transaction information as shown on the dispenser at the end of the delivery and prior to any post-delivery discount(s), including the:

(1) total volume of the delivery;

(2) unit price; and

(3) total computed price of the fuel sale.

(c) an itemization of the post-delivery discounts to the unit price;

(d) the final total price of the fuel sale after all post-delivery discounts are applied; and

(e) *the dispenser designation by either an alphabetical or numerical description.*

[Nonretroactive as of January 1, 2021]

(Added 2012) (Amended 2014, ~~and~~ 2018, and 20XX)

...

UR.3. Use of a Device

...

UR.3.3. Computing Device – Any computing device used in an application where a product or grade is offered for sale at one or more unit prices shall be used only for sales for which the device computes and displays the sales price for the selected transaction.

(Became retroactive 1999)

(Added 1989) (Amended 1992)

The following exceptions apply:

(a) Fleet sales and other price contract sales are exempt from this requirement.

(b) A truck stop dispenser used exclusively for refueling trucks is exempt from this requirement provided that:

(1) all purchases of fuel are accompanied by a **printed** receipt of the transaction containing the applicable price per gallon, the total gallons delivered, and the total price of the sale; and

(Added 1993)

- (2) unless a dispenser complies with S.1.6.4.1. Display of Unit Price, the price posted on the dispenser and the price at which the dispenser is set to compute shall be the highest price for any transaction which may be conducted.

(Added 1993)

- (c) A dispenser used in an application where a price per unit discount is offered following the delivery is exempt from this requirement, provided the following conditions are satisfied:

- (1) the unit price posted on the dispenser and the unit price at which the dispenser is set to compute prior to the application of any discount shall be the highest unit price for any transaction;

(Amended 2014)

- (2) all purchases of fuel are accompanied by a receipt recorded by the system. The receipt shall contain:

- a. the product identity by name, symbol, abbreviation, or code number;
- b. transaction information as shown on the dispenser at the end of the delivery and prior to any post-delivery discount including the:
 1. total volume of the delivery;
 2. unit price; and
 3. total computed price of the fuel sale prior to post-delivery discounts being applied.
- c. an itemization of the post-delivery discounts to the unit price; and
- d. the final total price of the fuel sale.

(Added 2012) (Amended 2014)

(Added 1989) (Amended 1992, 1993, 2012, ~~and 2014~~, and 20XX)

UR.3.4. ~~Printed Ticket. Recorded Representation.~~ – The total price; the total volume of the delivery; the price per liter or gallon; *and a corresponding alpha or numeric dispenser designation** shall be ~~shown, either printed or recorded~~ by the device ~~or in clear hand script~~, on any ~~printed ticket issued by a device and recorded representation~~ containing any one of these values and shall comply with G-S.5.6. Establishments where no product grades are repeated are exempt from the dispenser designation requirement.

**[Nonretroactive as of January 1, 2021]*

(Amended 2001, 2018, ~~and 2019~~, and 20XX)

B4: VTM-21.1 D S.1.1. Primary Elements., UR.2. User Requirements

Item Under Consideration:

Amend NIST Handbook 44, Vehicle Tank Meter Code as follows:

S.1.1. Primary Element

S.1.1.1. General. – A meter shall be equipped with a primary indicating element. ~~and may also be equipped with a primary recording element.~~ Except for systems used solely for the sale of aviation fuel into aircraft and for aircraft-related operations, a meter shall be equipped with a primary recording element.

(Amended 1993 and 20XX)

Note: ~~Except for systems used solely for the sale of aviation fuel into aircraft and for aircraft-related operations, vehicle tank meters shall be equipped with a primary recording element as required by paragraph UR.2.2. Ticket Printer; Customer Ticket. Recorded Representation~~

~~(Amended 1993 and 20XX)~~

...

S.1.4.2. ~~Printed Ticket, Recorded Representation.~~ – If a computing-type device issues a ~~printed ticket~~ **recorded representation** which displays the total computed price, the ~~ticket~~ **recorded representation** shall ~~also have printed clearly thereon record~~ the total quantity of the delivery, the appropriate fraction of the quantity, and the price per unit of quantity.

(Amended 1989, and 20XX)

...

UR.2. User Requirements.

...

UR.2.2. ~~Ticket Printer, Customer Ticket Recording Element.~~ – Vehicle-Mounted metering systems shall be equipped with a ~~ticket printer which shall be used for~~ **means to record** all sales where product is delivered through the meter **and shall comply with G-S.5.6.** A copy of the ticket issued by the device shall be ~~left with~~ **provided to** the customer at the time of delivery or as otherwise specified by the customer.

(Added 1993) (Amended 1994, and 20XX)

B4: LPG-21.1 D S.1.1. Primary Elements., UR.2. User Requirements

Item Under Consideration:

Amend NIST Handbook 44, LPG and Anhydrous Ammonia Liquid-Measuring Devices Code as follows:

S.1.1. Primary Elements.

S.1.1.1. General. – A meter shall be equipped with a primary indicating element and may also be equipped with a primary recording element.

Note: Vehicle-mounted metering systems shall be equipped with a primary recording element as required by paragraph UR.2.6. ~~Ticket Printer, Customer Ticket~~ **Recorded Representation**
(Amended 20XX)

...

S.1.1.6. ~~Printed Ticket, Recorded Representation~~ – Any ~~printed ticket issued~~ **recorded representation created** by a device of the computing type ~~on which there is printed~~ **includes** the total computed price, shall ~~have printed clearly~~ **also include** thereon the total volume of the delivery in terms of liters or gallons, and the appropriate decimal fraction of the liter or gallon, and the corresponding price per liter or gallon.

(Added 1979) (Amended 1987, and 20XX)

...

S.1.5.5. Recorded Representations for Transactions Where a Post-Delivery Discount(s) is Provided. – Except for fleet sales and other price contract sales, a ~~printed receipt~~ **recorded representation** providing the following information shall be available through a built-in or separate recording element that is part of the system for transactions involving a post-delivery discount:

- (a) the product identity by name, symbol, abbreviation, or code number;

- (b) transaction information as shown on the dispenser at the end of the delivery and prior to any post-delivery discount(s), including the:
 - (1) total volume of the delivery;
 - (2) unit price; and
 - (3) total computed price of the fuel sale.
- (c) an itemization of the post-delivery discounts to the unit price; and
- (d) the final total price of the fuel sale after all post-delivery discounts are applied.

(Added 2016) (Amended 20XX)

...

UR.2. User Requirements.

...

UR.2.6. ~~Ticket Printer, Customer Ticket, Recorded Representation~~– Vehicle-Mounted metering systems shall be equipped with ~~a ticket printer which shall be used for~~ means to record all sales where product is delivered through the meter and shall comply with G-S.5.6. A copy of the ~~ticket-recorded representation~~ issued by the device shall be ~~left with~~ provided to the customer at the time of delivery or as otherwise specified by the customer.

(Added 1992) (Amended 1994, and 20XX)

...

UR.2.7.2. Computing Device. – Any computing device used in an application where a product or grade is offered for sale at one or more unit prices shall be used only for sales for which the device computes and displays the sales price for the selected transaction. The following exceptions apply:

- (a) Fleet sales and other price contract sales are exempt from this requirement.
- (b) A truck stop dispenser used exclusively for refueling trucks is exempt from this requirement provided that:
 - (1) all purchases of fuel are accompanied by a ~~printed receipt~~ recorded representation of the transaction containing the applicable price per unit of measure, the total quantity delivered, and the total price of the sale; and
 - (2) unless a dispenser complies with S.1.5.1. Display of Unit Price, the price posted on the dispenser and the price at which the dispenser is set to compute shall be the highest price for any transaction which may be conducted.
- (c) A dispenser used in an application where a price per unit discount is offered following the delivery is exempt from this requirement, provided the following conditions are satisfied:
 - (1) the unit price posted on the dispenser and the unit price at which the dispenser is set to compute shall be the highest unit price for any transaction;
 - (2) all purchases of fuel are accompanied by a receipt recorded by the system for the transaction containing:
 - a. the product identity by name, symbol, abbreviation, or code number;

- b. transaction information as shown on the dispenser at the end of the delivery and prior to any post-delivery discount including the:
 - 1. total volume of the delivery;
 - 2. unit price; and
 - 3. total computed price of the fuel sale prior to post-delivery discounts being applied.
- c. an itemization of the post-delivery discounts to the unit price; and
- d. the final total price of the fuel sale after all post-delivery discounts are applied.

(Added 2016) (Amended 20XX)

B4: CLM-21.1 D S.1.4.1. ~~Printed Ticket~~ Recorded Representation., UR.2.6.3. ~~Printed Ticket~~ Recorded Representation.

Item Under Consideration:

Amend NIST Handbook 44, Cryogenic Liquid-Measuring Devices Code as follows:

S.1.4.1. ~~Printed Ticket~~ Recorded Representation – Any ~~printed ticket~~ recorded representation issued by a device of the computing type ~~on which there is printed~~ includes the total computed price, shall ~~have printed clearly thereon~~ also include the total quantity of the delivery, and the price per unit.

(Amended 20XX)

And

UR.2.6.2. ~~Tickets or Invoices~~. Recorded representation – Any ~~written invoice, or printed ticket,~~ recorded representation based on a reading of a device that is equipped with an automatic temperature or density compensator shall have shown thereon that the quantity delivered has been adjusted to the quantity at the NBP of the specific cryogenic product or the equivalent volume of gas at NTP.

(Amended 20XX)

UR.2.6.3. ~~Printed Ticket~~. Recorded Representation – Any ~~printed ticket issued~~ recorded representation provided by a device of the computing type ~~on which there is printed~~ includes the total computed price, the total quantity of the delivery, or the price per unit, shall also ~~show~~ include the other two values. ~~(either printed or in clear hand script)~~ and shall comply with G-S.5.6.

(Amended 20XX)

B4: MLK-XX.X D S.1.4.2 ~~Printed Ticket~~ Recorded Representation., UR.2.2. ~~Printed Ticket~~, Recorded Representation.

Item Under Consideration:

Amend NIST Handbook 44, Milk Meter Code as follows:

S.1.4.2. ~~Printed Ticket~~ Recorded Representation – If a computing-type device issues a ~~printed ticket~~ recorded representation which ~~displays~~ includes the total computed price, the ~~ticket~~ recorded representation shall ~~also have printed clearly thereon~~ include the total quantity of the delivery, the appropriate fraction of the quantity, and the price per unit of quantity.

(Amended 1989, and 20XX)

UR.2.2. ~~Printed Ticket, Recorded Representation.~~ – Any ~~printed ticket issued~~ **recorded representation created** by a device of the computing type ~~on which there is printed~~ **includes** the total computed price, the total quantity, or the price per unit of quantity, shall also ~~show~~ **include** the other two values ~~(either printed or in clear hand script).~~ **and shall comply with G-S.5.6.**

(Amended 1989 **and 20XX**)

B4: MFM-21.2 D S.6. ~~Printer Recorded Representations., UR.2.6. Ticket Printer, Customer Ticket, Recorded Representation., UR.3.4. Printed Ticket, Recorded Representation.~~

Item Under Consideration:

Amend NIST Handbook 44, Mass Flow Meter Code as follows:

S.6. ~~Printer, Recording Element~~ – When an assembly is equipped with means for ~~printing-recording~~ the measured quantity, the following conditions apply:

- (a) the scale interval shall be the same as that of the indicator;
- (b) the value of the ~~printed recorded~~ quantity shall be the same value as the indicated quantity;
- (c) *the ~~printed-recorded~~ quantity shall also include the mass value if the mass is not the indicated quantity; [Nonretroactive as of January 1, 2021]*
- (d) a quantity for a delivery (other than an initial reference value) cannot be recorded until the measurement and delivery has been completed;
- (e) the ~~printer recording element~~ is returned to zero when the resettable indicator is returned to zero; and
- (f) the ~~printed recorded~~ values shall meet the requirements applicable to the indicated values.

(Amended 2016, **and 20XX**)

S.6.1. ~~Printed Receipt Recorded Representations.~~ – Any ~~When a quantity is~~ delivered, ~~printed quantity the recorded representation~~ shall include an identification number, the time and date, and the name of the seller. This information may be printed by the device or pre-printed on the ticket.

(Amended 20XX)

And

UR.3.3 ~~Ticket Printer, Customer Ticket, Recorded Representation.~~ – Vehicle-Mounted metering systems shall be equipped with ~~a ticket printer which shall be used for~~ **means to record** all sales where product is delivered through the meter **and shall comply with G-S.5.6.** A copy of the ~~ticket recorded representation~~ issued by the device shall be ~~left with~~ **provided to** the customer at the time of delivery or as otherwise specified by the customer.

(Added 19934) (**Amended 20XX**)

...

UR.3.4. ~~Printed Ticket, Recorded Representation.~~ – The total price, the total quantity of the delivery, and the price per unit shall be ~~printed provided~~ on any ~~ticket recorded representation~~ issued by a device of the computing type and containing any one of these values.

(Added 1993) (**Amended 20XX**)

B4: CDL-21.1 D S.1.4.1. ~~Printed Ticket~~ Recorded Representations., UR.2.4.2. ~~Tickets or Invoices.~~ Recorded Representation.

Item Under Consideration:

Amend NIST Handbook 44, Carbon Dioxide Liquid-Measuring Devices Code as follows:

S.1.4.1. ~~Printed Ticket.~~ Recorded Representation– Any ~~printed ticket~~ recorded representation issued by a device of the computing type ~~on~~ which ~~there is printed~~ includes the total computed price shall ~~have printed clearly thereon~~ also include the total quantity of the delivery and the price per unit.

(Amended 20XX)

UR.2.4.2. ~~Tickets or Invoices~~ Recorded Representation. – Any ~~written invoice or printed ticket~~ recorded representation based on a reading of a device that is equipped with an automatic temperature or density compensator shall ~~have shown thereon~~ include that the quantity delivered has been temperature or density compensated.

(Amended 20XX)

B4: HGM-21.1 D S.2.6. Recorded Representations, Point of Sale Systems., S.6. ~~Printer.~~ Recording Element., UR.3.2. Vehicle-mounted Measuring Systems ~~Ticket Printer~~ Recording Element., UR.3.3. ~~Printed Ticket.~~ Recorded Representation.

Item Under Consideration:

Amend NIST Handbook 44, Hydrogen Gas-Measuring Devices Code as follows:

S.2.6. Recorded Representations, Point of Sale Systems. – A ~~printed~~ receipt shall be available through a built-in or separate recording element for transactions conducted with point-of-sale systems or devices activated by debit cards, credit cards, and/or cash. The ~~printed~~ receipt shall contain the following information for products delivered by the dispenser:

- (a) the total mass of the delivery;
- (b) the unit price;
- (c) the total computed price; and
- (d) the product identity by name, symbol, abbreviation, or code number.

(Amended 20XX)

...

S.6. ~~Printer.~~ Recording Element – When an assembly is equipped with means for ~~printing~~ recording the measured quantity, the ~~printed~~ recorded information must agree with the indications on the dispenser for the transaction and the ~~printed~~ recorded values shall be clearly defined.

(Amended 20XX)

S.6.1. ~~Printed Receipt.~~ Recorded Representation – ~~Any~~ When a quantity is delivered, printed quantity the recorded representation shall include an identification number, the time and date, and the name of the seller. ~~This information may be printed by the device or pre-printed on the ticket.~~

(Amended 20XX)

And

UR.3.2. Vehicle-mounted Measuring Systems ~~Ticket Printer~~ Recording Element.

(Amended 20XX)

UR.3.2.1. ~~Customer Ticket~~ Recording Element. – Vehicle-Mounted metering systems shall be equipped with ~~a ticket printer which shall be used for~~ means to record all sales where product is delivered through the device and shall comply with G-S.5.6. A copy of the ~~ticket~~ recorded representation issued by the device shall be ~~left with~~ provided to the customer at the time of delivery or as otherwise specified by the customer.

(Amended 20XX)

...

UR.3.3. ~~Printed Ticket~~ Recorded Representation. – The total price, the total quantity of the delivery, and the price per unit shall be ~~printed~~ provided on any ~~ticket~~ recorded representation issued by a device of the computing type and containing any one of these values.

(Added 1993) **(Amended 20XX)****B4: OTH-21.2 D Appendix D - Definitions.: recorded representations, recording element.****Item Under Consideration:**

Amend NIST Handbook 44, Appendix D - Definitions as follows:

recorded representation. – The printed, embossed, electronic, or other representation that is recorded as a quantity, unit price, total price, product identity or other information required by a weighing or measuring device. [1.10, 2.20, 2.21, 2.22, 2.24, 2.25, 3.30, 3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.37, 3.38, 3.39, 3.40, 5.54, 5.55, 5.56(a), 5.56(b), 5.57, 5.58, 5.60]

recording element. – An element incorporated in a weighing or measuring device by means of which ~~its~~ the device's performance relative to quantity or money value is permanently recorded electronically or on a tape, ticket, card, or the like, in the form of a printed, stamped, punched, or perforated representation or recorded electronically in instances where that option is permitted by specific code. [1.10, 2.20, 2.21, 2.22, 2.24, 2.25, 3.30, 3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.37, 3.38, 3.39, 3.40, 5.54, 5.55, 5.56(a), 5.56(b), 5.57, 5.58, 5.60]

Background/Discussion:

In 2014 G-S.5.6. was added to NIST Handbook 44 to allow for the issuance of electronic receipts. At that time the use of the term “print”, and all variations on the word “print” were not fully addressed.

The Oxford Dictionary defines print as “a mechanical process involving the transfer of text, images, or designs to paper.”

The Oxford Dictionary defines record as: to “set down in writing or some other permanent form for later reference, especially officially.”

Values that are delivered via electronic means are recorded values and not necessarily printed values. Printed indicates that a value has been transferred on to a hard document. While the intent of the 2014 amendment was to allow for the use of electronic receipts the terminology used is incorrect. In addition to receipts, there are instances where other information may be transmitted electronically.

When applying NIST HB 44 paragraph G-A.2. to weighing and measuring devices, multiple conflicts arise in the implementation of the 2014 Amendment of G-S.5.6. This is to clarify the terminology in NIST Handbook 44 and to recognize the changing technology in how transactions are recorded, and the information is disseminated.

NIST HB 44 Paragraph G-A.2.

G-A.2. Code Application. – This General Code shall apply to all classes of devices as covered in the specific codes. The specific code requirements supersede General Code requirements in all cases of conflict.
(Amended 1972)

During the Committee’s 2021 Interim Meeting, Mr. Dimitri Karimov (MMA) commented that the proposed changes to recognize electronically captured tickets are needed, editorial corrections are needed to some parts of the proposal, and he agreed with a developing status for this item. Mr. Charles Stutesman (Kansas) agreed that the item should be developing and noted that updates to the item under consideration were provided to the S&T Committee based on reviews that he had with NIST, OWM. Ms. Diane Lee (NIST OWM) noted that there are two proposed changes to NIST HB 44, Mass Flow Meter Code, Paragraph U.R.3.3 in the 2021 Interim Agenda. One proposal is Block 4 MFM-21.2 UR.3.3. (which was incorrectly numbered as UR.2.6 in the item under consideration in the 2021 Interim Meeting agenda) and the other is item MFM-21.1. UR.3.3. on the 2021 Interim Meeting agenda. Ms. Lee recommended the submitters work together to provide one proposed change.

During the Committee’s work session, the Committee accepted the revision and editorial changes to the Item Under Consideration that were provided by the submitter, Mr. Stutesman. The current Item Under Consideration includes revisions that were provided to the Committee from the submitter of the item.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items, this block of items included, were addressed in the subsequent 2021 NCWM Interim Meeting.

During the Committee’s 2021 Annual Meeting, Mr. Stutesman provided support for this item with a Developing Status. Mr. Stutesman also noted that he would like to hold in-person meetings to finalize the items in Block 4. Mr. Stutesman noted that when the electronic receipt provision was placed in the General Code, the specific Code supersedes the General Code. Mr. Stutesman stated that the goal was not to remove requirements but to add electronic receipts if customers want it. Mr. Stutesman requested comments on the proposal.

During the Committee’s work session, the Committee agreed to a Developing status for this item.

(NOTE: Below for reference is the proposal as it appeared in the 2021 Interim NCWM Meeting agenda.)

G-S.5.6. Recorded Representations. – Insofar as they are appropriate, the requirements for indicating and recording elements shall also apply to recorded representations. All recorded values shall be ~~printed~~ **provided** digitally. In applications where recorded representations are required, the customer may be given the option of not receiving the recorded representation. For systems equipped with the capability of issuing an electronic receipt, ticket, or other recorded representation, the customer may be given the option to receive any required information electronically (e.g., via cell phone, computer, etc.) in lieu of or in addition to a hard copy.

(Amended 1975, 2014 and **20XX**)

B4: LMD-21.2 D S.1.6.5. Money Value Computations., UR.3. Use of a Device.

Item Under Consideration:

Amend NIST Handbook 44, Liquid Measuring Devices Code as follows:

S.1.6.5. Money-Value Computations

...

S.1.6.5.6. Display of Quantity and Total Price, Aviation Refueling Applications.

(a) The quantity shall be displayed throughout the transaction.

(b) *The total price shall also be displayed under one of the following conditions:*

- (1) The total price can appear on the face of the dispenser or through a controller adjacent to the device.
- (2) If a device is designed to continuously compute and display the total price, then the total price shall be computed and displayed throughout the transaction for the quantity delivered.

(c) *The total price and quantity shall be displayed for at least five minutes or until the next transaction is initiated by using controls on the device or other customer-activated controls.*

(d) *A ~~printed~~ receipt shall be available and shall include, at a minimum, the total price, quantity, and unit price.*

[Nonretroactive as of January 1, 2008]

(Added 2007) (**Amended 20XX**)

S.1.6.7. Recorded Representations. – *Except for fleet sales and other price contract sales and for transactions where a post-delivery discount is provided, a ~~printed~~ receipt providing the following information shall be available through a built-in or separate recording element for all transactions conducted with point-of-sale systems or devices activated by debit cards, credit cards, and/or cash:*

- (a) *the total volume of the delivery;**
- (b) *the unit price;**
- (c) *the total computed price;**
- (d) *the product identity by name, symbol, abbreviation, or code number;* and*
- (e) *the dispenser designation by either an alphabetical or numerical description.***

**[Nonretroactive as of January 1, 1986] **[Nonretroactive as of January 1, 2021]*

(Added 1985) (Amended 1997, 2012, 2014, 2018 and **20XX**)

S.1.6.8. Recorded Representations for Transactions Where a Post-Delivery Discount(s) is Provided. – *Except for fleet sales and other price contract sales, a ~~printed~~ receipt providing the following information shall be available through a built-in or separate recording element that is part of the system for transactions involving a post-delivery discount:*

- (a) the product identity by name, symbol, abbreviation, or code number;
- (b) transaction information as shown on the dispenser at the end of the delivery and prior to any post-delivery discount(s), including the:
 - (1) total volume of the delivery;
 - (2) unit price; and
 - (3) total computed price of the fuel sale.
- (c) an itemization of the post-delivery discounts to the unit price;
- (d) the final total price of the fuel sale after all post-delivery discounts are applied; and
- (e) *the dispenser designation by either an alphabetical or numerical description.*

[Nonretroactive as of January 1, 2021]

(Added 2012) (Amended 2014, **and 2018, and 20XX**)

...

UR.3. Use of a Device

...

UR.3.3. Computing Device. – Any computing device used in an application where a product or grade is offered for sale at one or more unit prices shall be used only for sales for which the device computes and displays the sales price for the selected transaction.

(Became retroactive 1999)

(Added 1989) (Amended 1992)

The following exceptions apply:

- (a) Fleet sales and other price contract sales are exempt from this requirement.
- (b) A truck stop dispenser used exclusively for refueling trucks is exempt from this requirement provided that:
 - (1) all purchases of fuel are accompanied by a **printed** receipt of the transaction containing the applicable price per gallon, the total gallons delivered, and the total price of the sale; and
(Added 1993)
 - (2) unless a dispenser complies with S.1.6.4.1. Display of Unit Price, the price posted on the dispenser and the price at which the dispenser is set to compute shall be the highest price for any transaction which may be conducted.
(Added 1993)
- (c) A dispenser used in an application where a price per unit discount is offered following the delivery is exempt from this requirement, provided the following conditions are satisfied:
 - (1) the unit price posted on the dispenser and the unit price at which the dispenser is set to compute prior to the application of any discount shall be the highest unit price for any transaction;
(Amended 2014)
 - (2) all purchases of fuel are accompanied by a receipt recorded by the system. The receipt shall contain:
 - (a) the product identity by name, symbol, abbreviation, or code number;
 - (b) transaction information as shown on the dispenser at the end of the delivery and prior to any post-delivery discount including the:
 - 1. total volume of the delivery;
 - 2. unit price; and
 - 3. total computed price of the fuel sale prior to post-delivery discounts being applied.
 - (c) an itemization of the post-delivery discounts to the unit price; and
 - (d) the final total price of the fuel sale.

(Added 2012) (Amended 2014)

(Added 1989) (Amended 1992, 1993, 2012, and 2014, and 20XX)

UR.3.4. ~~Printed Ticket. Recorded Representation~~ – The total price; the total volume of the delivery; the price per liter or gallon; *and a corresponding alpha or numeric dispenser designation** shall be ~~shown, either printed recorded~~ by the device ~~or in clear hand script~~, on any ~~printed ticket issued by a device and recorded representation~~ containing any one of these values. Establishments where no product grades are repeated are exempt from the dispenser designation requirement.

**[Nonretroactive as of January 1, 2021]*

(Amended 2001, 2018, and 2019, and 20XX)

B4: VTM-21.1 D S.1.1. Primary Elements., UR.2. User Requirements

Item Under Consideration:

Amend NIST Handbook 44, Vehicle Tank Meter Code as follows:

S.1.1. Primary Element

S.1.1.1. General. – A meter shall be equipped with a primary indicating ~~element and may also be equipped with a primary recording element.~~ Except for systems used solely for the sale of aviation fuel into aircraft and for aircraft-related operations, a meter shall be equipped with a primary recording element.

Note: Except for systems used solely for the sale of aviation fuel into aircraft and for aircraft-related operations, vehicle-tank meters shall be equipped with a primary recording element as required by paragraph UR.2.2. ~~Ticket Printer; Customer Ticket. Recorded Representation.~~

(Amended 1993 and 20XX)

...

S.1.4.2. ~~Printed Ticket Recorded Representation~~ – If a computing-type device issues a ~~printed ticket recorded representation~~ which displays the total computed price, the ~~ticket recorded representation~~ shall ~~also have printed clearly thereon record~~ the total quantity of the delivery, the appropriate fraction of the quantity, and the price per unit of quantity.

(Amended 1989, and 20XX)

...

UR.2. User Requirements.

...

UR.2.2. ~~Ticket Printer, Customer Ticket Recording Element.~~ – Vehicle-Mounted metering systems shall be equipped with a ~~ticket printer which shall be used for~~ means to record all sales where product is delivered through the meter. A copy of the ticket issued by the device shall be ~~left with~~ provided to the customer at the time of delivery or as otherwise specified by the customer.

(Added 1993) (Amended 1994, and 20XX)

B4: LPG-21.1 S.1.1. Primary Elements., UR.2. User Requirements

Item Under Consideration:

Amend NIST Handbook 44, LPG and Anhydrous Ammonia Liquid-Measuring Devices Code as follows:

S.1.1. Primary Elements.

S.1.1.1. General. – A meter shall be equipped with a primary indicating element and may also be equipped with a primary recording element.

Note: Vehicle-mounted metering systems shall be equipped with a primary recording element as required by paragraph UR.2.6. ~~Ticket Printer; Customer Ticket.~~ Recorded Representation
(Amended 20XX)

...

S.1.1.6. ~~Printed Ticket.~~ Recorded Representation – Any ~~printed ticket issued~~ recorded representation created by a device of the computing type ~~on which there is printed~~ includes the total computed price, shall ~~have printed clearly~~ also include thereon the total volume of the delivery in terms of liters or gallons, and the appropriate decimal fraction of the liter or gallon, and the corresponding price per liter or gallon.

(Added 1979) (Amended 1987, and 20XX)

...

S.1.5.5. Recorded Representations for Transactions Where a Post-Delivery Discount(s) is Provided. – Except for fleet sales and other price contract sales, a ~~printed receipt~~ recorded representation providing the following information shall be available through a built-in or separate recording element that is part of the system for transactions involving a post-delivery discount:

- (a) the product identity by name, symbol, abbreviation, or code number;
- (b) transaction information as shown on the dispenser at the end of the delivery and prior to any post-delivery discount(s), including the:
 - (1) total volume of the delivery;
 - (2) unit price; and
 - (3) total computed price of the fuel sale.
- (c) an itemization of the post-delivery discounts to the unit price; and
- (d) the final total price of the fuel sale after all post-delivery discounts are applied.

(Added 2016) (Amended 20XX)

...

UR.2. User Requirements.

...

UR.2.6. ~~Ticket Printer; Customer Ticket.~~ Recorded Representation – Vehicle-Mounted metering systems shall be equipped with ~~a ticket printer which shall be used for~~ means to record all sales where product is delivered through the meter. A copy of the ticket recorded representation issued by the device shall be ~~left with~~ provided to the customer at the time of delivery or as otherwise specified by the customer.

(Added 1993) (Amended 1994, and 20XX)

...

UR.2.7.2. Computing Device. – Any computing device used in an application where a product or grade is offered for sale at one or more unit prices shall be used only for sales for which the device computes and displays the sales price for the selected transaction. The following exceptions apply:

- (a) Fleet sales and other price contract sales are exempt from this requirement.
- (b) A truck stop dispenser used exclusively for refueling trucks is exempt from this requirement provided that:
 - (1) all purchases of fuel are accompanied by a ~~printed receipt~~ recorded representation of the transaction containing the applicable price per unit of measure, the total quantity delivered, and the total price of the sale; and
 - (2) unless a dispenser complies with S.1.5.1. Display of Unit Price, the price posted on the dispenser and the price at which the dispenser is set to compute shall be the highest price for any transaction which may be conducted.
- (c) A dispenser used in an application where a price per unit discount is offered following the delivery is exempt from this requirement, provided the following conditions are satisfied:
 - (1) the unit price posted on the dispenser and the unit price at which the dispenser is set to compute shall be the highest unit price for any transaction;
 - (2) all purchases of fuel are accompanied by a receipt recorded by the system for the transaction containing:
 - a. the product identity by name, symbol, abbreviation, or code number;
 - b. transaction information as shown on the dispenser at the end of the delivery and prior to any post-delivery discount including the:
 - 1. total volume of the delivery;
 - 2. unit price; and
 - 3. total computed price of the fuel sale prior to post-delivery discounts being applied.
 - c. an itemization of the post-delivery discounts to the unit price; and
 - d. the final total price of the fuel sale after all post-delivery discounts are applied.

(Added 2016) (Amended 20XX)

B4: CLM-21.1

S.1.4.1. ~~Printed Ticket~~ Recorded Representation., UR.2.6.3. ~~Printed Ticket~~Recorded Representation.

Item Under Consideration:

Amend NIST Handbook 44, Cryogenic Liquid-Measuring Devices Code as follows:

S.1.4.2. ~~Printed Ticket~~ Recorded Representation – If a computing-type device issues a ~~printed ticket~~ recorded representation which ~~displays~~ includes the total computed price, the ~~ticket~~ recorded representation shall ~~also have printed clearly thereon~~ include the total quantity of the delivery, the appropriate fraction of the quantity, and the price per unit of quantity.

(Amended 1989, and 20XX)

And

UR.2.6.3. Printed Ticket. Recorded Representation. – Any ~~printed ticket issued~~ **recorded representation created** by a device of the computing type ~~on which there is printed~~ **includes** the total computed price, the total quantity of the delivery, or the price per unit, shall also ~~show~~ **include** the other two values ~~(either printed or in clear hand script).~~

(Amended 20XX)

B4: MFM-21.2

S.6. ~~Printer~~Recorded Representations., UR.2.6. ~~Ticket Printer, Customer Ticket,~~ Recorded Representation., UR.3.4. ~~Printed Ticket. Recorded Representation~~

Item Under Consideration:

Amend NIST Handbook 44, Mass Flow Meter Code as follows:

S.6. ~~Printer. Recording Element~~ – When an assembly is equipped with means for ~~printing-recording~~ the measured quantity, the following conditions apply:

- (a) the scale interval shall be the same as that of the indicator;
- (b) the value of the ~~printed-recorded~~ quantity shall be the same value as the indicated quantity;
- (c) *the ~~printed-recorded~~ quantity shall also include the mass value if the mass is not the indicated quantity; [Nonretroactive as of January 1, 2021]*
- (d) a quantity for a delivery (other than an initial reference value) cannot be recorded until the measurement and delivery has been completed;
- (e) the ~~printer-recording element~~ is returned to zero when the resettable indicator is returned to zero; and
- (f) the ~~printed-recorded~~ values shall meet the requirements applicable to the indicated values.

(Amended 2016, and 20XX)

S.6.1. ~~Printed Receipt~~ Recorded Representations. – ~~Any When a quantity is~~ delivered, ~~printed quantity the recorded representation~~ shall include an identification number, the time and date, and the name of the seller. ~~This information may be printed by the device or pre-printed on the ticket.~~

(Amended 20XX)

And

UR.2.6. ~~Ticket Printer, Customer Ticket,~~ Recorded Representation . – Vehicle-Mounted metering systems shall be equipped with ~~a ticket printer which shall be used for~~ **means to record** all sales where product is delivered through the meter. A copy of the ~~ticket-recorded representation~~ issued by the device shall be **left with provided to** the customer at the time of delivery or as otherwise specified by the customer.

(Added 1993) (Amended 1994, and 20XX)

...

UR.3.4. ~~Printed Ticket. Recorded Representation.~~ – The total price, the total quantity of the delivery, and the price per unit shall be **recorded provided** on any ~~ticket recorded representation~~ issued by a device of the computing type and containing any one of these values.

(Added 1993) (Amended 20XX)

B4: CDL-21.1 D S.1.4.1. Printed Ticket Recorded Representations., UR.2.4.2. Tickets or Invoices. Recorded Representation.

Item Under Consideration:

Amend NIST Handbook 44, Carbon Dioxide Liquid-Measuring Devices Code as follows:

S.1.4.1. ~~Printed Ticket.~~ Recorded Representation– Any ~~printed ticket~~ recorded representation issued by a device of the computing type on which **there is printed** includes the total computed price shall **have printed clearly thereon** also include the total quantity of the delivery and the price per unit.
(Amended 20XX)

UR.2.4.2. ~~Tickets or Invoices~~ Recorded Representation. – Any ~~written invoice or printed ticket~~ recorded representation based on a reading of a device that is equipped with an automatic temperature or density compensator shall ~~have shown thereon~~ include that the quantity delivered has been temperature or density compensated.

(Amended 20XX)

B4: HGM-21.1 D S.2.6. Recorded Representations, Point of Sale Systems., S.6. Printer. Recording Element., UR.3.2. Vehicle-mounted Measuring Systems Ticket Printer Recording Element., UR.3.3. Printed Ticket. Recorded Representation.

Item Under Consideration:

Amend NIST Handbook 44, Hydrogen Gas-Measuring Devices Code as follows:

S.2.6. Recorded Representations, Point of Sale Systems. – A ~~printed~~ receipt shall be available through a built-in or separate recording element for transactions conducted with point-of-sale systems or devices activated by debit cards, credit cards, and/or cash. The ~~printed~~ receipt shall contain the following information for products delivered by the dispenser:

- (a) the total mass of the delivery;
- (b) the unit price;
- (c) the total computed price; and
- (d) the product identity by name, symbol, abbreviation, or code number.

(Amended 20XX)

...

S.6. ~~Printer. Recording Element~~ – When an assembly is equipped with means for printing-recording the measured quantity, the ~~printed-recorded~~ information must agree with the indications on the dispenser for the transaction and the ~~printed-recorded~~ values shall be clearly defined.

(Amended 20XX)

S.6.1. ~~Printed Receipt.~~ Recorded Representation – ~~Any-When a quantity is~~ delivered, ~~printed quantity the recorded representation~~ shall include an identification number, the time and date, and the name of the seller. ~~This information may be printed by the device or pre-printed on the ticket.~~

(Amended 20XX)

And

UR.3.2. Vehicle-mounted Measuring Systems ~~Ticket Printer~~ Recording Element.

(Amended 20XX)

UR.3.2.1. ~~Customer Ticket~~ Recording Element. – Vehicle-Mounted metering systems shall be equipped with ~~a ticket printer which shall be used for~~ means to record all sales where product is delivered through the meter. A copy of the ~~ticket-recorded representation~~ issued by the device shall be ~~left with~~ provided to the customer at the time of delivery or as otherwise specified by the customer.

(Amended 20XX)

...

UR.3.3. ~~Printed Ticket~~ Recorded Representation. – The total price, the total quantity of the delivery, and the price per unit shall be recorded on any ticket issued by a device of the computing type and containing any one of these values.

(Added 1993) (Amended 20XX)

B4: OTH-21.2 Appendix D - Definitions.: recorded representations, recording element.

Item Under Consideration:

Amend NIST Handbook 44, Appendix D - Definitions as follows:

recorded representation. – The printed, embossed, electronic, or other representation that is recorded as a quantity, unit price, total price, product identity or other information required by a weighing or measuring device. [1.10, 2.20, 2.21, 2.22, 2.24, 2.25, 3.30, 3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.37, 3.38, 3.39, 3.40, 5.54, 5.55, 5.56(a), 5.56(b), 5.57, 5.58, 5.60]

recording element. – An element incorporated in a weighing or measuring device by means of which its performance relative to quantity or money value is permanently recorded electronically or on a tape, ticket, card, or the like, in the form of a printed, stamped, punched, or perforated representation. [1.10, 2.20, 2.21, 2.22, 2.24, 2.25, 3.30, 3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.37, 3.38, 3.39, 3.40, 5.54, 5.55, 5.56(a), 5.56(b), 5.57, 5.58, 5.60]

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2020 Annual Meeting, no comments were received during Open Hearings. However, the submitter did provide additional changes and continues to develop the item. The Committee recommends this block be given Developing status.

At the SWMA 2020 Annual Meeting, during the Open Hearings the Committee heard from Ms. Diane Lee (NIST OWM), who stated that the purpose of this item is to allow an option for an electronic ticket by revising the language of the Recording Requirements in NIST Handbook 44. She also stated that NIST OWM supports this block. The Committee also heard from Mr. Hal Prince (Florida) that electronic tickets are already allowed, and that this revision would allow electronic only tickets. The Committee also heard from Mrs. Tina Butcher (NIST OWM) who stated that she had the same concerns as Mr. Prince but was assured the intent was only to allow an electronic option for customers. The Committee also heard from Mr. Ken Ramsburg (Maryland) who stated that he agreed with Mr. Prince, and that the General Code already covered this. The Committee also heard from Mr. Tory Brewer (West Virginia) who stated that he was concerned that this item would make it difficult for customers to receive a printed ticket if it was not set as a default, and how the customer would choose a printed ticket instead of an electronic one. Mrs. Butcher also stated that Specific Code superseded the General Code, so that is why a change is likely needed to allow electronic tickets.

After considering this item the Committee recommends that it be given Developing Status.

At the NEWMA 2020 Interim Meeting, the Committee agrees with the body that the revised edition of this proposal has been fully developed by the submitter and recommends it move forward as a Voting Item. Discussion was heard both for and against the proposal. Comments against the proposal included that there was no significant change or that the location in the handbook was not appropriate or may conflict with current State laws regarding electronic records. Comments in favor of the proposal were that it allowed clarity through definitions and where “printed” hard copies are currently required, allows for an electronic option without adding conflict.

At the CWMA 2020 Interim Meeting, Mr. Charlie Stutesman (Kansas), the developer of the item, gave a presentation to the S&T Committee updating the current changes on the item. The Committee received comments from both regulatory officials and industry representatives expressing a need for this item. The Committee feels this item is fully developed and we recommend this item move forward as a Voting item.

At the NEWMA 2021 Annual Meeting, Ms. Lee commented on the desire by many to add the ability for electronic recorded representations and that she expects continued development from the submitter. Mr. Russ Vires (SMA) supports this item and recognizes the importance for options to the consumer. Comments were given in support by Mr. Jim Willis (New York) and Mr. John McGuire (New Jersey). The NEWMA S&T Committee recommends that this item remain with Developing status.

At the CWMA 2021 Annual Meeting, comments were taken on the whole block. Mr. Stutesman, the developer of this item, gave a brief update and requested that this item remains developing. Ms. Lee supports continuing development of this item. Mr. Vires, speaking on behalf of the SMA, supports continuing development of this item. Mr. Loren Minnich (Kansas) submitted suggested changes to developer, included in Appendix at the end of this report. Mr. Minnich thought G-S.5.6. is getting too wordy and should be simplified to allow specific codes to speak for themselves. The CWMA S&T Committee recommends that this item remain a Developing item.

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

ITEM BLOCK 5 (B5) CATEGORY 3 METHODS OF SEALING

(**Note:** It was agreed at the 2021 NCWM Interim Meeting that B5 LMD-20.1 would be Withdrawn and the submitters would develop B5: LMD-21.1.)

B5: LMD-20.1 W Table S.2.2. Categories of Device and Methods of Sealing.

Source:

Wayne Fueling Systems, LLC

Purpose:

Allow for an electronic log in lieu of a printed copy for a category 3 seal on an LMD.

Item Under Consideration:

Amend NIST Handbook 44 Liquid Measuring Device Code as follows:

<i>Table S.2.2. Categories of Device and Methods of Sealing</i>	
<i>Categories of Device</i>	<i>Methods of Sealing</i>

<p>Category 1: No remote configuration capability.</p>	<p>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</p>
<p>Category 2: Remote configuration capability, but access is controlled by physical hardware.</p> <p>The device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode or shall not operate while in this mode.</p>	<p>[The hardware enabling access for remote communication must be on-site. The hardware must be sealed using a physical seal or an event counter for calibration parameters and an event counter for configuration parameters. The event counters may be located either at the individual measuring device or at the system controller; however, an adequate number of counters must be provided to monitor the calibration and configuration parameters of the individual devices at a location. If the counters are located in the system controller rather than at the individual device, means must be provided to generate a hard copy of the information through an on-site device.]*</p> <p>[*Nonretroactive as of January 1, 1996]</p>
<p>Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</p> <p>[Nonretroactive as of January 1, 1995]</p> <p>The device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode or shall not operate while in this mode.</p> <p>[Nonretroactive as of January 1, 2001]</p>	<p>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter. A printed copy of the information must be available on demand through the device or through another on-site device. The information may also be available electronically. The information must be available on demand through the device or through another on-site device either in printed or electronic format. The event logger shall have a capacity to retain records equal to 10 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</p>

[Nonretroactive as of January 1, 1995]

(Table Added 1993) (Amended 1995, 1998, 1999, 2006, and 2015)

Background/Discussion:

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Mr. Randy Moses
Wayne Fueling Systems
(215) 257-2759, randy.moses@doverfs.com

The amount of information required for a category 3 log is extensive (5 items × 1000 events). That is a lot of printing, especially using a standard receipt printer. With today's technology leaning towards the ability to perform remote downloads and configurations, we need a practical approach that allows this technology to move forward while still providing the means to document changes to sealable parameters that have taken place in the device. In most cases, the printer inside of the dispenser is not directly connected to the dispenser electronics and thus printing on the internal printer is at best difficult, and in most cases, not possible. The ability to provide an electronic file in lieu of a printed copy can also enhance the ability to organize the information contained in the log to make it easier to present to the official. The exact format and electronic transportation method are open to discussion.

The submitter noted that Officials do not carry devices capable of reading an electronic file or are not permitted to access such files.

B5: LMD-21.1 D Table S.2.2. Categories of Device and Method of Sealing

Source:

Gilbarco Inc.

Purpose:

To modify Category 3 requirements under Methods of Sealing to allow electronic copy of event logger for liquid measuring devices. To enhance or have alternate wording to existing Item LMD-20.1 under review for this item.

Item Under Consideration:

Amend NIST Handbook 44, Liquid Measuring Devices Code as follows:

<p align="center">Table S.2.2. Categories of Device and Methods of Sealing</p>	
Categories of Device	Methods of Sealing
<p>Category 1: No remote configuration capability.</p>	<p>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</p>
<p>Category 2: Remote configuration capability, but access is controlled by physical hardware.</p> <p>The device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode or shall not operate while in this mode.</p>	<p>[The hardware enabling access for remote communication must be on-site. The hardware must be sealed using a physical seal or an event counter for calibration parameters and an event counter for configuration parameters. The event counters may be located either at the individual measuring device or at the system controller; however, an adequate number of counters must be provided to monitor the calibration and configuration parameters of the individual devices at a location. If the counters are located in the system controller rather than at the individual device, means must be provided to generate a hard copy of the information through an on-site device.]*</p> <p>[*Nonretroactive as of January 1, 1996]</p>
<p>Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</p> <p>[Nonretroactive as of January 1, 1995]</p> <p>The device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode or shall not operate while in this mode.</p> <p>[Nonretroactive as of January 1, 2001]</p>	<p>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter. <u>A printed copy of the information must be available on demand through the device or through another on-site device. The information may also be available electronically. The event logger information shall be available at the time of inspection either as a printed copy or in electronic format. The information may be printed by the device, printed by another on-site device, or transmitted electronically.</u> The event logger shall have a capacity to retain records equal to 10 times the number of sealable parameters in the device, but</p>

	not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)
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[Nonretroactive as of January 1, 1995]

(Table Added 1993) (Amended 1995, 1998, 1999, 2006, and 2015)

Background/Discussion:

The current requirement in NIST HB 44 Liquid Measuring Devices Code is that category 3 devices must have a printed copy made available on site for the event logger information. Category 3 devices are fully connected electronic devices here in the modern age and thus we need to move away from the archaic requirement of only allowing a paper copy for this item. The industry fully supports this change. LMD's have many types of regulatory events that accumulate in the event logger: blend ratio changes, calibration changes for the meters, SW downloads are examples. Often our only available print option is through the device receipt printer. With its tiny width of receipt paper, the event log for an older liquid measuring device will be several feet long and have text that wraps and is difficult to read. Allowing an electronic copy will be more convenient, easily read, and easily saved/retained/shareable.

Wayne Fueling Systems, LLC has a current proposal, Item LMD-20.1 for this item and in discussion with him he has been very supportive of me providing alternate wording above for consideration, or possibly to use in place of his proposal. Hopefully we can hear from Wayne Fueling Systems on this in the upcoming meetings. Also, I am aware of the Electric vehicle charger industry is working on this item to propose allow electronic copy as well.

The submitter requested voting status for this item in 2021.

During the 2020 NCWM Interim Meeting Open Hearings the Committee heard from Mr. Brent Price (Gilbarco) who recommended a voting or developing status for this item and offered to work with the submitter, Wayne Fueling Systems, LLC and has some alternative language that he would like to go through the regionals for input. Mr. Price further explained that new category 3 devices are coming to market that have audit logs that can be printed but the font is very small. Mr. Tim Chesser (Arkansas) responded that Arkansas would require an electronic log if it is an option and that the proposal needs additional work concerning the log information and agrees with the efforts of Gilbarco and Wayne.

Mr. Dmitri Karimov (MMA) noted that he supports the electronic log option proposed by Wayne and Gilbarco which would allow for flexibility. Mrs. Tina Butcher (NIST OWM) supported the proposal for electronic logs but noted that the proposal needs more development. Among other issues addressed, Mrs. Butcher noted that NIST OWM believes it is important to ensure that the inspector can access the event log at the time of inspection. Mrs. Butcher also noted that additional comments are in the NIST OWM analysis. Mr. Steve Harrington (Oregon) agreed with both comments from Mrs. Butcher and Mr. Chesser and stated that opening cabinets on dispensers is becoming more problematic and could see that electronic audit trail logs could help to resolve this issue. Mr. Jim Pettinato (Technip FMC, Chair of the Software Sector) noted that the Software Sector agrees that electronic logs are preferred and suggested, in addition, that a user requirement may also be needed to address concerns he heard from inspectors not being able to get the information they need. Mr. Jim Willis (New York) reported that he supports both Mrs. Butcher and Mr. Chesser's comments and supports further development of this item. Mr. Richard Suiter (Richard Suiter Consulting) stated that he is currently working with a software company that is building a two-level security system that may offer solutions to resolve any opposition to this proposal. Mr. Kevin Schnepf (California) supports electronic logs and supports this as a Developing item.

During the Committee's work session, the Committee agreed that this item should be given a Developing status. The submitter should focus on how the log will be formatted, if not printed. The format should be such that there are no barriers to accessing the information in the log.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items, this block of items included, were addressed in the subsequent 2021 NCWM Interim Meeting.

During the 2021 NCWM Interim Meeting Open Hearings, the Committee heard from Mr. Randy Moses (Wayne Fueling Systems, LLC) the submitter of LMD-20.1, who supports the option of electronic logs for Category 3 sealing requirements. The Committee also heard from a representative from Gilbarco who also supports electronic logs. Mr. Schnepf supported the development of this item. Mr. Josh Nelson (Oregon) asked if there will be one proposal and there was support for moving forward with Item LMD-21.1. Mr. Moses agreed to withdraw item number LMD-20.1. Both submitters of Items LMD-20.1 and LMD-21.1 will work together to further develop Item LMD-21.1.

During its work session, the Committee agreed to withdraw LMD-20.1 and agreed that the submitter of LMD-20.1, Wayne Fueling Systems, LLC, will work with the Submitter of LMD-21.1, Gilbarco, to develop one proposal to allow electronic logs for Category 3 sealing requirements. The Committee agreed on a Developing status for LMD-21.1

At the 2021 Annual Meeting Open Hearings, the Committee heard comments from Ms. Diane Lee, (NIST OWM) noting that a similar proposal from Wayne Fueling Systems was withdrawn from the agenda and that both Wayne and Gilbarco would be developing LMD-21.1. Ms. Lee also noted that there is a similar proposal on the S&T agenda, Item EVF-21.4 that the Committee may want to consider when discussing this item and that NIST OWM agrees with a developing status for this item.

At the 2021 Annual Committee meeting the Committee agreed to a Developing status for this item.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2020 Annual Meeting, Mr. Price commented this is a little different than other proposals. Gas pumps have limited printing capabilities on receipts so they would like the option for electronic printing. There was a suggestion to combine this into one proposal with Wayne Pump. Mr. Harrington commented he was concerned about how this will affect device testing efficiency by adding additional testing steps in the field. He is also concerned about time and structure of how this information is received in the field. Committee recommends this to be assigned developing status. The Committee recommends that the submitter work with other stakeholders and vet this through the other regions for further development.

At the SWMA 2020 Annual Meeting during Open Hearings, the Committee heard from Mr. Price, the submitter, who stated that he wants to have the option of an Electronic Event Log, and for the item to be considered as fully developed. The Committee also heard from Mrs. Butcher who stated she would like to have consistent language in the Handbook for LMD, EVSE, and Taximeters. The Committee notes that it prefers the language in this item rather than a similar item submitted by Wayne last year.

After considering this item the Committee recommends the item given Voting status.

At the NEWMA 2020 Interim Meeting, the Committee agrees with the body's recommendation that this item move forward with a Voting designation. During Open Hearings, the Committee heard from the submitter that the intent was not to have multiple proposals, but that there was support from the submitter of the developing items in moving this item forward. There was no discussion heard against this proposal. There is another proposed Item EVF 21.4. that has a similar purpose and should have matching language.

At the CWMA 2020 Interim Meeting, Ms. Lee advised the S&T Committee that the developers of both items are working together to present one item in the future. We recommend this Item remain Developing and look forward to collaborative results to come.

At the NEWMA 2021 Annual Meeting, a comment was heard from Ms. Lee that Gilbarco is working with Wayne on the continued development of this item and that NIST supports its development. The NEWMA S&T Committee recommends that this item remain with Developing status.

At the CWMA 2021 Annual Meeting, comments were taken on the whole block. Ms. Lee provided background and technical information on this item. NIST OWM believes this should move forward as a developing item. The CWMA S&T Committee recommends that this item remain a developing item.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

GEN - GENERAL CODE

GEN-20.1 W G-T.3. Application and Appendix D – Definitions: true value

(Note: At the 2020 NCWM Interim Meeting the Committee agreed to remove this Item from Block 2 and make it a separate stand-alone item. Refer to the background information under Block 2 within this report for additional details.)

Item Under Consideration:

Amend NIST Handbook 44, General Code as follows:

G-T.3. Application. ~~Tolerances "in excess" and tolerances "in deficiency" shall apply to errors in excess and to errors in deficiency, respectively. Tolerances "on overregistration" and tolerances "on underregistration" shall apply to errors in the direction of overregistration and of underregistration, respectively.~~ Measurement errors shall be in reference to the "true value," which shall be the legal basis of all tolerance compliance. The calculation of measurement error in testing shall follow these principles:

- (a) When tolerances in a code are expressed as tolerances "in excess" and tolerances "in deficiency," error shall be calculated as: Error = True Value – Device Indication. Plus (+) errors are "in excess" and minus (-) errors are "in deficiency". These errors may also be known as "errors of delivery."
- (b) When tolerances in a code are expressed as tolerances "on overregistration" and tolerances "on underregistration," error shall be calculated as: Error = Device Indication – True Value." Plus (+) errors are "on overregistration" and minus (-) errors are "on underregistration." These errors may also be known as "errors of indication."
- (c) The percent error in all cases shall be calculated as: Error% = Error / True Value * 100
Example: if the error is +1 g and the true value is 100 g, the error% is +1 %.

(Also see Appendix D, Definitions.)

(Amended 20XX)

And amend Appendix D – Definitions as follows:

True Value. – A value representing the quantity of a reference used in evaluating tolerance compliance, which is obtained using prescribed, traceable standards and a prescribed test procedure performed by an authorized person. The true value is expressed without uncertainty and is considered to have no error. The true value may be assigned prior to conducting the test or during the conduct of the test. Examples: When testing a scale

using a test weight, the true value of the test weight is typically assigned by an authorized laboratory prior to conducting the test. When testing a liquid measuring device, the true value of the test draft is assigned by the authorized inspector during the conduct of the test.

(Added 20XX)

Background/Discussion:

At the 2020 NCWM Interim Meeting the Committee agreed to remove this item from Block 2 and make it a separate item. The Committee acknowledged the receipt of comments from some of the regional associations concerning the use of the term “True Value” in the formulas included in subparts (a) & (b) and how that term is defined in the proposal. The Committee agreed that there may be value in further defining the application of tolerance and that the item should be given a Developing status adding that consideration should be given to amending the use of the term “True Value.”

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items, this one included, were addressed in the subsequent 2021 NCWM Interim Meeting.

During the 2021 NCWM Interim Meeting, the Committee heard comments questioning the need for the changes being proposed in this item. Also heard was a comment suggesting a possible benefit to use the formulae provided in this proposal for anyone who is confused by the terms overregistration and underregistration. Other comments pointed out error in the use of a “plus” sign in subparts (a) and (b) in the proposal and some that believe the identification of “tolerances in deficiency” and “tolerances in excess” in this proposal is incorrect.

During the Committee’s work session at the 2021 Interim Meeting, it concluded that this Item be Withdrawn. However, there may be some value to the formulae included in this proposal and it was recommended that the submitter possibly consider drafting another proposal to include the formulae in the NIST HB 44 Fundamental Considerations and then to submit that proposal at a later date.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2020 Annual Meeting, only new items and those with a Voting status were considered during this meeting; this item was not considered.

At the SWMA 2020 Annual Meeting, only new items and those with a Voting status were considered during this meeting; this item was not considered.

At the NEWMA 2020 Interim Meeting, only new items and those with a Voting status were considered during this meeting; this item was not considered.

At the CWMA 2020 Interim Meeting, the CWMA S&T Committee heard from numerous regulatory officials questioning that if the purpose of this item is to provide clarity, it seems to provide more confusion. We feel this item is not a necessary addition to the handbook, and recommend this item be withdrawn.

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

GEN-20.2 W G-T.1. Acceptance Tolerances

Source:

Arizona Department of Agriculture, Weights and Measures Services Division

Purpose:

Clarify whether acceptance tolerance should be applied following calibration of equipment.

Item Under Consideration:

Amend NIST Handbook 44, General Code by adding the following new paragraph:

G-T.1. Acceptance Tolerances. – Acceptance tolerances shall apply to equipment:

- (a) to be put into commercial use for the first time;
- (b) that has been placed in commercial service within the preceding 30 days and is being officially tested for the first time;
- (c) that has been returned to commercial service following official rejection for failure to conform to performance requirements and is being officially tested for the first time within 30 days after corrective service;

(d) where evidence exists that calibration has been performed within the past 30 days;

~~(d)~~**(e)** that is being officially tested for the first time within 30 days after major reconditioning or overhaul; and

~~(e)~~**(f)** undergoing type evaluation.

(Amended ~~1989~~ **XXXX**)

Background/Discussion:

NIST Handbook 44 lacks absolute clarity regarding the application of acceptance tolerance when evidence exists that a commercial device has been calibrated during the past 30 days (for example maintenance documents or calibration decals are applied demonstrating equipment calibration). The General Code G-T.1. does not state that acceptance tolerance would apply in this situation. However, Appendix A, Section 2.1 states “Acceptance tolerances are applied to new or newly reconditioned or adjusted equipment and are smaller than (usually one-half of) the maintenance tolerances” (underline added).

G-UR.4.3 states that whenever equipment is adjusted, the adjustments shall be so made as to bring performance errors as close as practicable to zero value; therefore, it would appear that acceptance tolerance should be the appropriate tolerance to apply. If opposition exists to this interpretation, Appendix A, Section 2.1 should be modified to clarify that acceptance tolerance does not apply to adjusted equipment.

During the 2020 NCWM Interim Meeting S&T Committee Open Hearing session, the submitter of the item, Mr. Michael Brooks (Arizona), requested the original proposal be amended as stated during the Open Hearings and that a written copy of that request had been sent to the Committee. The amendments offered would change the language in section 2.1 in NIST HB 44 Appendix A – Fundamental Considerations and would not change the General Code requirement G-T.1. as originally proposed. The new version of the proposal would amend the first sentence of the second paragraph in Section 2.1. and revise that language as follows:

Acceptance tolerances are applied to new or newly reconditioned ~~or adjusted~~ equipment, **equipment returned to service following official rejection, or equipment undergoing NTEP evaluation, and** are smaller than (usually one-half of) the maintenance tolerances.

Other comments heard during the Open Hearing session included the recognition that the new, amended proposal completely changes the direction of the original proposal and that the original proposal should be withdrawn, and a new proposal be submitted with the new changes reflected in that new proposal. Another point emphasized was that when adjustments are made to commercial weighing and measuring equipment, it is expected that those adjustments bring the performance of the device to as close to zero error as possible. For that reason, it should be anticipated that equipment adjusted within the past 30 days will meet acceptance tolerance.

Mr. Russ Vires (SMA) stated its opposition to the original proposal as did Mr. Dmitri Karimov speaking for the MMA. The MMA however, indicated its support for the new amended proposal. Mr. Tim Chesser (Arkansas) questioned whether there should be a new proposal submitted (i.e., a new Form 15) to NCWM since the amendments being recommended to the original proposal represented a drastic change in what is being proposed. The submitter (Arizona) confirmed its wishes to move forward with the amended version.

Mr. John Barton (NIST OWM) stated that this same issue has been brought before the Committee twice before and was rejected both times. In 1990, a similar proposal submitted advocated that whenever a security seal was broken, acceptance tolerance should be applied when the device is tested within 30 days following the adjustments. This proposal was not adopted with the opposition noting that there are reasons to break a security seal that do not include performance adjustments to the device. In 2009 another similar proposal was submitted and was again rejected based on the recognition that applying acceptance tolerance to equipment that has undergone scheduled routine adjustment could deter owners from having their equipment maintained in peak operating condition.

NIST OWM also recommended that along with any of the proposed changes, if adopted, there should be additional language added to paragraph G-T.1. that clarifies whether or not acceptance tolerances are to be applied to equipment that has undergone adjustment as a matter of routine, as is the practice when those adjustments are made following the device's rejection or following major reconditioning or overhaul.

Ms. Fran Elson-Houston (Ohio) agreed with NIST that the item should be withdrawn and would like to see more clarification of this.

Mr. Richard Suiter (Richard Suiter Consulting) commented that the new language mirrors G-T.1. and asked if the general code supersedes the Appendix.

In the Committee's 2020 Interim Meeting work session, the Committee considered the amended language and since those amendments substantially changed the direction and scope of that initial proposal, they agreed that the Item Under Consideration should be withdrawn.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, Ms. Michelle Wilson (Arizona), submitter of the item, pointed out that there are inconsistent references in NIST HB 44 including G-UR.4.3., G-T.1., and Appendix A, Section 2.1. Arizona is questioning the correct tolerance (maintenance or acceptance) to apply following adjustments to a device. Arizona does not have a position on which tolerance should apply and is seeking clarification on this issue.

Mr. Barton stated that this issue has been noted in the past and that it presents concerns to device owners and service agents as to the implications of making routine adjustments during regular service intervals. For example, a service agent may have reservations about making adjustments to a device knowing that there would be a possibility that the device would be subject to the application of acceptance tolerances by regulatory agents within 30 days following such adjustment.

The WWMA agrees that item has merit. The WWMA also agreed that item is not yet fully developed, and the Item should move forward as a Developing item. The Submitter is encouraged to address all requirements currently in NIST Handbook 44 that are lacking in consistency with regard to the application of acceptance tolerance. The WWMA would also encourage additional input from other regional associations and stakeholders as to what tolerances should be applied in these cases.

At the SWMA 2019 Annual Meeting, Mr. Hal Prince (Florida) stated that the submitters' main objective with this item is to gain clarity on when to apply Acceptance Tolerance. After considering this item the SWMA recommends this item become Developing. The SWMA's main concern on this issue is the language "where evidence exists." The Committee would like that language to become more defined.

At the NEWMA 2019 Interim Meeting, the NEWMA agrees with the body that the changes proposed are unnecessary and that the item should be withdrawn. During Open Hearings, the NEWMA heard from Mr. Jim Willis (New York) and Mr. John McGuire (New Jersey) who believe the proposal has no merit and is redundant.

At the CWMA 2019 Interim Meeting, several regulators recommended the item be withdrawn. Adding this requirement could place an undue burden on the owners of devices that are capable of performing within applicable tolerances as currently required by G-T.1.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

GEN-21.1 W Use-for-Fee Vehicle and Axle-Load Scales

Source:

NIST Office of Weights and Measures

Purpose:

Solicit input to help develop a future proposal to amend NIST Handbook 44 to address devices such as vehicles scales that provide axle weights for a fee.

Item Under Consideration:

To be developed for either the General Code, Scales Code, or both.

Previous Action:

N/A

Original Justification:

The purpose of creating this new developing item is to solicit Input from the weights and measures enforcement community and affected stakeholders to help develop a future proposal to amend NIST Handbook 44 to address the following concern:

NIST Handbook 44 does not provide sufficient detail to address the predominant use of permanently installed axle-load scales, multi-platform vehicle scale systems, and, perhaps to a lesser extent, single-platform vehicle scales in the weighing of axle- and axle-group loads of vehicles for a fee. This leaves open the question of whether NIST Handbook 44 was intended to apply to scales used for this purpose (although we think most would agree that it should) and if so, to what extent are requirements intended to apply.

Some states are inconsistent in their inspection of these devices and systems, especially with respect to their use in determining total vehicle weight from the summation of the different axle- and axle-group loads. However, such application of these scales satisfies an important need. Truck drivers and many of the companies that employ them, rely on their accuracy to determine whether or not loads to be transported have been distributed properly over the different axles and axle groups of the truck to know whether or not the vehicle complies with federal and state legal load limits in effect. The intended purpose of state and federal loading limits is to ensure the safe transport of loads over roadways and minimize pavement damage.

Modifications may be necessary to General Code Paragraph G-A.1. Application. Modifications and/or additions may also be necessary to the Scales Code, including modifications to paragraphs such as UR.3.3. Single-Draft Vehicle Weighing and possibly other sections to clarify the appropriate use of these devices with regard to the need to make weighments in a single draft.

Providing it's agreed that the use of permanently installed axle-load scales, multi-platform vehicle scale systems, and single-platform vehicle scales in providing axle, axle-group loads and total vehicle weight of vehicles weighed for a fee constitutes "commercial" use of these scales then we believe, as an initial step, the Application section of the

Scales Code (and/or perhaps the General Code) needs to be amended to make clear the application of NIST HB 44 to these scales.

The following are some of the issues/questions that will need to be addressed through potential changes to NIST HB 44:

- Scales Code UR.3.3 Single-Draft Weighing requires a vehicle or coupled vehicle combination to be “commercially weighed” on a vehicle scale only as a single-draft, although subpart (b) of this paragraph allows the weight of a vehicle or coupled vehicle combination to be determined by adding together the weights obtained while all axle and axle groups of a vehicle are resting simultaneously on more than one scale platform.
- A resolution must be determined for the question of whether the practice of assessing a fee for the use of a scale is considered commercial. Some have declared this practice is already addressed by the General Code paragraph G-A.1. Application citing the reference made in that paragraph to a commercial device being one that is used for “hire” in determining quantities (such as weights).
- The intended meaning of “commercially weighed” in Scales Code paragraph UR.3.3. is not clear. The note that is part of this paragraph provides an exception for highway enforcement scales and scales used for the collection of statistical data. The exception does not extend to vehicle scales used to determine axle and axle-group loads and/or total vehicle weight for a fee. This paragraph would need to be amended to make clear the permissible use of permanently installed vehicle scales to weigh individual axles and axle groups (not for use in commercial transactions) for a fee when not all axles and axle groups of a truck are resting simultaneously on more than one platform. It might also be amended to make clear the permissible use of permanently installed axle-load scales to perform this same function.
- Is it permissible for an axle-load scale or a vehicle scale to provide a printed/recorded summed total of the different axles and axle-groups of vehicles that are weighed in separate, multiple drafts to indicate a total vehicle weight? If so, disclosure is needed on the ticket to make evident the vehicle was not weighed as a single draft and, for this reason, the vehicle’s total weight is not to be used for commercial transactions. Examples of weight tickets that have been provided to NIST OWM are not clearly marked to indicate the permissible use of such weights, leading to the possibility that the weights may be inappropriately used for trade. Additional requirements such as that provided in other sections of the Scales Code which require specific markings on the weight tickets (to restrict their use or call attention to how they were derived), may be necessary to ensure appropriate use of the weights obtained from these scales. For example, this might include the addition of a requirement for a marking such as “this weight is not for commercial use”
- The approach requirements for axle-load scales and vehicle scales purposefully differ in NIST HB 44. The approach requirement for axle-load scales (Scales Code paragraph UR.2.6.2.) requires a straight paved approach at each end of the scale in the same plane as the platform. The approaches (i.e., one at each end of the platform) are required to be the same width as the platform and of sufficient length to ensure the level positioning of vehicles during weight determinations. The level positioning of vehicles when being weighed is very important. Previous studies have shown that if any portion of the vehicle is above or below the plane of the platform, the force of the load will transfer to other axles or axle groups on the vehicle. This transfer of force results in large weighing errors for the individual axle and axle-groups. This fact becomes a very important consideration when deciding whether or not vehicle scales should be permitted to provide this same service since only the first 10 feet of an approach to a vehicle scale is required to be in the same plane as the platform. The different requirements for approaches on vehicle scales and axle-load scales leads to several questions and concerns as follows:
 1. Is it appropriate to use a vehicle scale to provide axle weights for a vehicle when the approaches of the scale do not provide for the level positioning of vehicles during weight determinations?

2. Is it an appropriate use of a vehicle scale to provide axle weights when the approaches of the scale do provide for the level positioning of vehicles during weight determinations? If so, under what conditions may the scale be used for this purpose? Consider the following:
 - a) Vehicle scale platforms range in length, some as short as 30 feet and some perhaps 70 feet or longer. Considering these different platform lengths and the different axle configurations of the many trucks on U.S. roadways, what would be considered acceptable procedures for determining the individual axle and axle-group loads of those different trucks? For example, it may not be possible to isolate each axle or axle group on a 5-axle tractor trailer on a vehicle scale that has a platform length greater than the spacing between steering axle and rear axle of the tandem drive axles of the tractor. It may be necessary to weigh more than one set of axles and then subtract one from the gross to determine the weight of the other.
 - b) Several US scale manufacturers offer a three-independent platform vehicle scale system; each independent weighing/load receiving element having its own weight display and a fourth display that provides a summed total of the three. One US scale manufacturer recently reported that the current NTEP CC for the three-platform vehicle scale system it produces is for a “vehicle scale” and nowhere on the NTEP certificate appears the term “axle-load scale.” It is not known the type of scale NTEP has designated for other such systems.

Weights and measures jurisdictions have long considered the application of these systems “commercial” and have been approving them for use in determining axle and axle-group loads as well as total vehicle weight (i.e., total vehicle weight from the summing of the individual axle and axle-group loads when all can be weighed simultaneously on one or more platforms) for a fee.

Not all vehicles to be weighed on these systems, however, can fit onto them. That is, the distance from the front axle to the furthestmost rear axle of some vehicles (e.g., vehicles that are oversized or have spread axles) exceeds the total combined length of the three scale platforms. When this occurs, oftentimes such vehicles are split weighed (i.e., weighed in multiple drafts without all individual elements resting simultaneously on one of the scale platforms when the weights are determined). Additionally, there exists anecdotal reporting that the approaches to some of these vehicle scale systems meet the requirements for both axle-load scales and vehicle scales, while others meet only the approach requirements for vehicle scales.

When considering the use of these systems to weigh vehicles for which all axles and axle groups are unable to fit onto the platforms and be weighed simultaneously, the following are several questions needing addressed:

- I. Is it an appropriate use of these systems to provide individual axle and axle group loads? If so, should such use be restricted to only those systems in which the entrance and exit approaches are of sufficient length to ensure the level positioning of all vehicles during weight determinations?
- II. Must the different values recorded by the system identify the position of the different axle and axle groups of a vehicle?
- III. When total vehicle weight is also provided (from the summing of the different axle and axle group loads) how must it be disclosed on the ticket given that paragraph UR.3.3. prohibits vehicles from being “commercially weighed” using such procedures.
- IV. Under what conditions could the scale system’s owner/operator be able to provide axle-, axle-group loads, and total vehicle weight for a fee?

Given the complexity of this issue, it is expected that additional questions and issues will arise through discussion of this developing item.

Given the variety of different vehicle axle/axle grouping configurations, it is not practical nor cost-effective to manufacture and place into service scales capable of accommodating all of the possible combinations of vehicle axles/axle groupings such that they could be weighed in a single draft. Therefore, there may be those supporting the use of vehicle scales in violation of current requirements and may try to justify the practice of “split-weighing” on vehicle scales to obtain axle/axle group weights. That support could create complexity and additional complications for enforcement of Scales Code requirement UR.3.3. “Single-Draft Vehicle Weighing.”

At the 2021 NCWM Interim Meeting, the Committee heard opposing views on this issue during the Open Hearing session. Mr. Kevin Schnepf (California) and Mr. Loren Minnich (Kansas) agreed with NIST OWM that this item should be given Developing status so that the questions and concerns outlined by NIST OWM could be vetted. Other comments from Mr. Tim Chesser (Arkansas) and Mr. Charles Stutesman (Kansas) pointed out there is no actual proposed changes to consider and therefore, the item should not be included on the S&T Committee’s agenda.

Some comments indicated that charging a fee for the use of a scale should be (and is in some jurisdictions) designated as a commercial transaction while others disagreed. Mr. Minnich and Mr. Eric Golden (Cardinal Detecto) agreed on the interpretation that NIST HB 44 General Code (G-A.1.) already includes the “hire” of a weighing/measuring device as a commercial transaction.

During the Committee’s work session, the Committee members shared their thoughts about maintaining a placeholder on its agenda to solicit input, but they also stated their reservations about assigning a status since there is no specific proposal. The Committee agreed to Withdraw the item.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2020 Annual Meeting, the WWMA heard comments from Mr. John Barton (NIST OWM) stating that not all vehicles will fit on a single draft weightment resulting in multi draft weightments. NIST HB 44 requires a single draft weightment for commercial draft transaction. In addition, there is confusion whether an axle weight is a commercial transaction when there is a fee applied to the weightment process. NIST recommends this proposal as a developing item. Mr. Barton further clarified the difference in NIST HB 44 Scales Code approach requirements between axle scales and vehicle scales. Mr. Golden noted that Cardinal scale views these axle load weightments as a commercial transaction. Mr. Lou Straub (Fairbanks Scale) stated that he was seeking data on how many oversized vehicles there really are being weighed. Mr. Straub pointed out that on a CAT scale printout if it is a multi-draft ticket has a statement that the weight listed are not certifiable. Mr. Steven Harrington (Oregon) Axle Weight with a fee is a commercial transaction. He stated many different axel configurations are available. Oregon ODOT uses axle weight for law enforcement.

The WWMA S&T Committee agreed to recommend a Developing status for this item with recommendation that the submitter poll jurisdictions on whether these are commercial transactions.

At the SWMA 2020 Annual Meeting, during the Open Hearings the SWMA heard comments from Mr. Barton, who stated that NIST OWM would like the item to move forward as Developing. The issue originated from a field inspector who witnessed a truck trying to get a weightment from a scale that was much shorter than the truck. He stated that many issues have arisen around NIST HB 44’s lack of clarity such as excessively long trucks, the validity of axle weight scales, the issue of single draft weighing vs split weighing, and whether paying for a weightment constitutes a commercial transaction. The SWMA also heard from Mr. Straub, who stated that he agrees with Mr. Barton, and the item should be made Developing. He stated that the Handbook does not apply to law enforcement scales, and that many of these scales are not used commercially. Mr. Straub stated that split weighing is not appropriate for commercial transactions, but that we need to clarify this for the big picture. The SWMA also heard from Mr. Golden, who agrees that this item should be made developing. He stated that split weighing can be used if a truck is too long, but that it is not legal for trade. He questioned whether this would apply to CAT scales or just small axle load scales, and that he believed that charging for a weightment is a commercial transaction. The SWMA also heard from Mr. Chesser, who stated that this was a non-issue in Arkansas. The SWMA also heard from Mr. Hal Prince (Florida), who stated that he would like a clarification on the definition of charging for weightments as a commercial transaction

added to the Handbook. The SWMA also heard from Mr. Ken Ramsburg (Maryland) who stated that he agrees with the item being made developmental. Mr. Ramsburg stated that paying for weighments is considered a commercial transaction in Maryland. Mr. Ramsburg also stated that the issue of split weighing needs to be dealt with to protect from fraud. Mr. Ramsburg stated that notice of split weighing should be required on the ticket. Mr. Straub also stated that the Handbook does not currently require vehicle scales to have a ticket printer, nor does it have specific recording requirements. Mr. Chesser also stated that he agreed that the Handbook was behind on Recording Requirements, and whether NIST and SMA would develop this. Mr. Barton stated that NIST OWM would develop the issue, and Mr. Russ Vires (Scale Manufacturers Association) stated that SMA would review the issue in November and that Mettler Toledo will participate in the development of this issue.

After considering this item the SWMA S&T Committee recommends the item be given Developing status.

At the NEWMA 2020 Interim Meeting, the NEWMA S&T Committee agrees with the body that this proposal has merit and recommends this be a Developing Item. The submitter (NIST OWM) described the motivation for the item and the desired results to be achieved in development. This may require modifications/additions to the general code, scale code and possibly other sections. Differences in the requirements for vehicle scales and axle load scales were outlined. There are requirements for trucks traveling on public highways to obtain weights for compliance with highway weight limits and the length of these trucks does not always allow for single draft weighments. During the NEWMA Open Hearings, they heard comments from industry and state officials defining current regulations in NIST HB 44 and current State practices. The submitter is open to further discussion and development to address issues and concerns.

At the CWMA 2020 Interim Meeting, the S&T Committee received comments from both regulatory officials and industry representatives discussing the numerous issues that this item has brought to light. The developer requested this item be given a Developing status. CWMA agreed with the developer and recommend Developing status.

SCL - SCALES

SCL-16.1 W Sections Throughout the Code to Include Provisions for Commercial Weigh-in-Motion Vehicle Scale Systems

Source:

Rinstrum, Inc. and Right Weigh Innovations (2016)

Purpose:

Recognize commercial Weigh-in-Motion vehicle scale systems.

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

S.1. Design of Indicating and Recording Elements and of Recorded Representations.

...

S.1.1.1. Digital Indicating Elements.

- (a) A digital zero indication shall represent a balance condition that is within $\pm \frac{1}{2}$ the value of the scale division.
- (b) *A digital indicating device shall either automatically maintain a “center-of-zero” condition to $\pm \frac{1}{4}$ scale division or less, or have an auxiliary or supplemental “center-of-zero” indicator that defines a zero-balance condition to $\pm \frac{1}{4}$ of a scale division or less. A “center-of-zero” indication may operate when zero is indicated for gross and/or net mode(s).
[Nonretroactive as of January 1, 1993]*

- (c) Weigh-in-Motion Vehicle Scales Zero or Ready Indication. – Provision shall be made to indicate or record either a zero or ready condition. A zero or ready condition may be indicated by other than a continuous digital zero indication, provided that an effective automatic means is provided to inhibit a measuring operation when the device is in an out-of-zero or non-ready condition.

(Amended 1992 ~~and~~ 2008, and 20XX)

...

S.1.8. Computing Scales.

...

S.1.8.6. Values to be Recorded, Weigh-In-Motion Vehicle Scales. – At a minimum, the following values shall be printed and/or stored electronically for each vehicle weighment:

- (a) lane identification (required if more than one lane at the site has the ability to weigh a vehicle in motion);
- (b) weight and sequence of each axle;
- (c) total vehicle weight;

(d) time and date.
(Added 20XX)

...

S.1.14. Weigh-In-Motion Vehicle Scale: Operational Limitation. – A weigh-in-motion vehicle scale shall not provide a weight indication or recorded representation if any operational limitation is exceeded.
(Added 20XX)

...

S.2. Design of Balance, Tare, Level, Damping, and Arresting Mechanisms.

S.2.1. Zero-Load Adjustment.

S.2.1.1. General. – A scale shall be equipped with means by which the zero-load balance may be adjusted. Any loose material used for this purpose shall be enclosed so that it cannot shift in position and alter the balance condition of the scale.

Except for an initial zero-setting mechanism, an automatic zero adjustment outside the limits specified in S.2.1.3. Scales Equipped with an Automatic Zero-Tracking Mechanism is prohibited.

(Amended 2010)

S.2.1.2. Scales used in Direct Sales. – A manual zero-setting mechanism (except on a digital scale with an analog zero-adjustment mechanism with a range of not greater than one scale division) shall be operable or accessible only by a tool outside of and entirely separate from this mechanism, or it shall be enclosed in a cabinet. Except on Class I or II scales, a balance ball shall either meet this requirement or not itself be rotatable.

A semiautomatic zero-setting mechanism shall be operable or accessible only by a tool outside of and separate from this mechanism or it shall be enclosed in a cabinet, or it shall be operable only when the indication is stable within plus or minus:

- (a) 3.0 scale divisions for scales of more than 2000 kg (5000 lb) capacity in service prior to January 1, 1981, and for all axle load, railway track, weigh-in-motion vehicle systems, and vehicle scales; or

(Amended 20XX)

- (b) 1.0 scale division for all other scales.

S.2.1.3. Scales Equipped with an Automatic Zero-Tracking Mechanism.

S.2.1.3.1. Automatic Zero-Tracking Mechanism for Scales Manufactured Between January 1, 1981, and January 1, 2007. – The maximum load that can be “rezeroed,” when either placed on or removed from the platform all at once under normal operating conditions, shall be for:

- (a) bench, counter, and livestock scales: 0.6 scale division;

- (b) vehicle, weigh-in-motion vehicle systems, axle load, and railway track scales: 3.0 scale divisions; and

(Amended 20XX)

- (c) all other scales: 1.0 scale division.

(Amended 2005)

S.2.1.3.2. Automatic Zero-Tracking Mechanism for Scales Manufactured on or after January 1, 2007. – The maximum load that can be “rezeroed,” when either placed on or removed from the platform all at once under normal operating conditions, shall be:

- (a) for vehicle, weigh-in-motion vehicle systems, axle load, and railway track scales: 3.0 scale divisions; and

- (b) for all other scales: 0.5 scale division.

(Added 2005)

...

S.2.5. Damping Means. – An automatic-indicating scale and a balance indicator shall be equipped with effective means to damp oscillations and to bring the indicating elements quickly to rest.

S.2.5.1. Digital Indicating Elements. – Except for weigh-in-motion vehicle systems being operated in a dynamic mode, Digital-digital indicating elements equipped with recording elements shall be equipped with effective means to permit the recording of weight values only when the indication is stable within plus or minus:

(Amended 20XX)

- (a) 3.0 scale divisions for scales of more than 2000 kg (5000 lb) capacity in service prior to January 1, 1981, hopper (other than grain hopper) scales with a capacity exceeding 22 000 kg (50 000 lb), and for all vehicle, axle load, livestock, and railway track scales and

- (b) 1.0 scale division for all other scales.

The values recorded shall be within applicable tolerances.

(Amended 1995)

...

N.7. Weigh-in-Motion Vehicle Scale.

N.7.1. Static Testing. – A Weigh-in-Motion Vehicle Scale shall be tested statically, whenever possible, using field standard weights / test loads in accordance with Table 4, uniformly distributed on the scale platform. Additionally, for scale platforms with a length of less than 4 feet a test load not greater than one half of section capacity shall be positioned between the centerline and left and right side respectively. Scale platforms with a length of 4 feet or greater shall be tested in accordance with N.1.3.3.1. Class IIIL acceptance and maintenance tolerance as shown in Table 6. shall apply.

N.7.2. Dynamic Testing. – The Dynamic test for a Weigh-in-Motion-Vehicle Scale shall simulate the normal intended use as closely as possible i.e. test as used. The minimum test shall consist of a vehicle(s), loaded with known field standards, dynamically weighed three consecutive times. The known field standards should then be unloaded and three additional dynamic weighments of the empty vehicle(s) should be recorded. Additionally, for scale platform widths greater than 11 feet, at least one of the loaded vehicle runs and empty vehicle runs shall be made near the left edge and right edge of

the scale platform respectively. Class III L acceptance and maintenance tolerance as shown in Table 6. shall apply to the known field test standards load minus the calculated value (loaded weight – unloaded weight = calculated value) the Table 6 tolerance values shall be based on the value of the known test load.

(Added 20XX)

...

T.N.3. Tolerance Values.

...

T.N.3.X. Tolerances for Weigh-in-Motion Vehicle Scales. –

T.N.3.X.1. Static Weighing. – Acceptance tolerance shall be one-half maintenance tolerance shown in Table 6. Maintenance Tolerances.

T.N.3.X.2. Dynamic Weighing. – Acceptance tolerance shall be one-half maintenance tolerance shown in Table 6. Maintenance Tolerances.

(Added 20XX)

...

UR.1. Selection Requirements. – Equipment shall be suitable for the service in which it is used with respect to elements of its design, including but not limited to, its capacity, number of scale divisions, value of the scale division or verification scale division, minimum capacity, and computing capability.¹

...

UR.1.6. Recording Element, Class III L Weigh-In-Motion Vehicle Scales. – Class III L Weigh-In-Motion Vehicle Scales must be equipped with a recording element.

(Added 20XX)

...

UR.2.6. Approaches.

UR.2.6.1. Vehicle Scales. – *On the entrance and exit end(s) of a vehicle scale, there shall be a straight approach as follows:*

(a) the width at least the width of the platform,

*(b) the length at least one-half the length of the platform but not required to be more than 12 m (40 ft),
and*

¹ Purchasers and users of scales such as railway track, hopper, and vehicle scales should be aware of possible additional requirements for the design and installation of such devices.

(Footnote Added 1995)

- (c) *not less than 3 m (10 ft) of any approach adjacent to the platform shall be in the same plane as the platform. Any slope in the remaining portion of the approach shall ensure (1) ease of vehicle access, (2) ease for testing purposes, and (3) drainage away from the scale.*

In addition to (a), (b), and (c), scales installed in any one location for a period of six months or more shall have not less than 3 m (10 ft) of any approach adjacent to the platform constructed of concrete or similar durable material to ensure that this portion remains smooth and level and in the same plane as the platform; however, grating of sufficient strength to withstand all loads equal to the concentrated load capacity of the scale may be installed in this portion.

[Nonretroactive as of January 1, 1976]

(Amended 1977, 1983, 1993, 2006, and 2010)

UR.2.6.2. Axle-Load Scales. – At each end of an axle-load scale there shall be a straight paved approach in the same plane as the platform. The approaches shall be the same width as the platform and of sufficient length to insure the level positioning of vehicles during weight determinations.

UR.2.6.3. Weigh-in-Motion Vehicle Scales. – **At each end of a Weigh-in-Motion Vehicle Scale there shall be a straight approach in the same plane as the platform. The approaches shall be the same width as the platform and of sufficient length to insure the level positioning of vehicles during weight determinations. Both approaches shall be made of concrete or similar durable material (e.g., steel).**

(Added 20XX)

...

UR.3.2. Maximum Load. – A scale shall not be used to weigh a load of more than the nominal capacity of the scale.

UR.3.2.1. Maximum Loading for Vehicle Scales. – A vehicle scale shall not be used to weigh loads exceeding the maximum load capacity of its span as specified in Table UR.3.2.1. Span Maximum Load.

(Added 1996)

Note: UR.3.2.1. is not applicable to Weigh-In-Motion Vehicle Scales.

(Added 20XX)

...

UR.3.3. Single-Draft Vehicle Weighing. A vehicle or a coupled-vehicle combination shall be commercially weighed on a vehicle scale only as a single draft. That is, the total weight of such a vehicle or combination shall not be determined by adding together the results obtained by separately and not simultaneously weighing each end of such vehicle or individual elements of such coupled combination. However, the weight of:

- (a) a coupled combination may be determined by uncoupling the various elements (tractor, semitrailer, trailer), weighing each unit separately as a single draft, and adding together the results; or
- (b) a vehicle or coupled-vehicle combination may be determined by adding together the weights obtained while all individual elements are resting simultaneously on more than one scale platform.

Note: This paragraph does not apply to **weigh-in-motion vehicle scales**, highway-law-enforcement scales and scales used for the collection of statistical data.

(Added 1992) **(Amended 20XX)**

...

UR.3.7. Minimum Load on a Vehicle Scale or Weigh-in-Motion Vehicle Scale. – A vehicle scale or weigh-in-motion vehicle scale shall not be used to weigh net loads smaller than:

- (a) 10 d when weighing scrap material for recycling or weighing refuse materials at landfills and transfer stations; and
- (b) 50 d for all other weighing.

As used in this paragraph, scrap materials for recycling shall be limited to ferrous metals, paper (including cardboard), textiles, plastic, and glass.

(Amended 1988, 1992, ~~and 2006~~, and 20XX)

...

UR.3.9. Use of Manual Weight Entries. – Manual gross or net weight entries are permitted for use in the following applications only when:

- (a) a point-of-sale system interfaced with a scale is giving credit for a weighed item;
- (b) an item is pre-weighed on a legal for trade scale and marked with the correct net weight;
- (c) a device or system is generating labels for standard weight packages;
- (d) postal scales or weight classifiers are generating manifests for packages to be picked up at a later time; or
- (e) livestock and vehicle scale or weigh-in-motion vehicle scale systems that generate weight tickets to correct erroneous tickets.

(Added 1992) (Amended 2000 ~~and 2004~~, and 20XX)

Background/Discussion:

These items have been assigned to the Weigh-in-Motion (WIM) Task Group for further development. For more information or to provide comment, please contact:

Co-Chair

Mr. Alan Walker
Florida Dept. of Ag. and Consumer Services
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Co-Chair

Mr. Tim Chesser
Arkansas Bureau of Standards
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Rinstrum and Right Weigh Innovation (manufacturers of weigh-in-motion vehicle scale systems) submitted a proposal in 2016 to modify the tentative WIM Code for Screening and Sorting. The original purpose of this item was to recognize a higher accuracy class and appropriate requirements in Section 2.25. Weigh-In-Motion Systems Used for Vehicle Enforcement Screening Tentative Code by adding commercial and law enforcement applications. Specifically, WIM vehicle scale systems capable of performing to within the tolerances specified for a higher accuracy class would be permitted for use in commercial applications and for highway law enforcement.

In February 2016, the NCWM agreed to form a task group (TG), at the recommendation of the Committee, to consider a proposal that would expand the new NIST Handbook 44 Weigh-In-Motion Systems Used for Vehicle Enforcement Screening – Tentative Code to also apply to commercial use. Mr. Alan Walker (Florida) agreed to serve as chairman of the new TG. The WIM Task Group (TG), however, agreed in 2016 that it would be more appropriate to address these higher accuracy WIM systems by proposing changes to Section 2.20. Scales Code, which remains the current effort of the TG.

Information and details on the TG's work and any updates on progress made during 2016-2018 can be found in the S&T Committee's Final Reports for that time period.

During the 2019 NCWM Interim Meeting, the Committee heard testimony from Mr. Walker indicating that the submitter has prepared for collecting data that would provide evidence that the Rinstrum WIM system can comply with the stated tolerances in the proposal. Currently, the TG has not been able to observe any data collection or receive conclusive results. During the Committee's work session, the Committee agreed to maintain the Assigned status for this item.

During the 2019 NCWM Annual Meeting, the Committee received an update from Mr. Walker stating that the submitter, Rinstrum had completed the installation of a WIM system to be used to provide data and evidence to support the submitter's claims regarding these system's performance capabilities. However, the TG has yet to witness any of the data being collected. Upon the request of the TG's Co-Chair, the Committee agreed to maintain the Assigned status of this item.

At the 2020 NCWM Interim Meeting, Mr. Tim Chesser (Arkansas and WIM TG Co-Chair) stated that there is nothing new to report and that the TG has not met since August 2019. Mr. Brad Fryburger (Rinstrum) stated that the trials the submitter has been performing to generate data regarding the performance capabilities of the submitter's system has not reached a point where 100 % of trial runs over the system have met Class III L tolerances. Noting that there can be many variables that could cause the results to fall outside the allowable tolerances, Mr. Fryburger stated that he was not yet able to eliminate all sources of detrimental influences during the test runs.

Mr. Lou Sakin (Massachusetts) noted that this item has been on the Committee's agenda for 5 years and seems to be at a standstill. Without evidence that the TG is making further progress, he recommended the item be returned to the submitter for further development or withdrawn.

NIST OWM stated that the TG has requested data to support the submitter's claims their system will meet NIST HB 44 Scales Code Class III L tolerances. The submitter had made previous statements indicating that the collection of this type of data could be witnessed by members of the TG and/or Committee members. NIST OWM pointed out this has not yet happened and that further work by the TG was dependent on the collection of this data.

Mr. Charles Stutesman (Kansas), Mr. Kevin Schnepf (California), and Mr. Russ Vires (SMA) recommended this item be withdrawn due to a lack of further development. Mr. Richard Suiter (Richard Suiter Consulting) pointed out that the TG has done a great deal of work on amending the NIST HB 44 Scales Code to apply to these WIM systems and that this work should not be disregarded. Mr. Suiter pointed out that the TG's work could also benefit other manufacturers of WIM systems and therefore has value and suggested this item be put forward as a voting item or allow it to continue as assigned to the TG.

During their work session, the Committee agreed this proposal is not fully developed and will remain assigned to the WIM Task Group (WIM TG). Members of the Committee also agree to the following:

- Evidence of devices which are capable of compliance with Class III L tolerances must be provided to the WIM TG by June 12, 2020.
- The collection of data, which can be presented as evidence of compliance with class III L tolerances, is to be witnessed by members of the S&T Committee and/or WIM TG members.
- The data collection procedure is to include a minimum of three passes with three trucks (total of 9 weighments) over a WIM scale using 3 separate and different motor vehicles (representing the range of weighments expected during typical use) to be considered as evidence that a WIM scale system is capable of compliance with Class III L tolerances.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items, including this one, were addressed in the subsequent 2021 NCWM Interim Meeting.

At the 2021 NCWM Interim Meeting, the Committee heard testimony from Mr. John Barton (NIST OWM) pointing out that there has been no activity from the Task Group assigned to this proposal and that this item has been on the Committee's agenda for almost five years. Also noted was that the submitter was granted a previous extension (until December 2020) to produce evidence justifying additional work by the Task Group. Co-Chair Walker stated that there has been no recent activity and requested that the Committee provide an extension that will allow the submitter additional time to produce the requested evidence of the system's performance. Co-Chair Walker stated that the submitter should be given until the 2021 NCWM Annual Meeting to produce the necessary data.

Mr. Suiter stated that he had spoken with the submitter and was told that the testing being done is producing results showing their system is generating a 98 % accuracy.

Mr. Vires, speaking on behalf of the SMA, recommended the proposal's withdraw. Noting the amount of time this item has been on the Committee's agenda, also recommending withdraw was Mr. Stutesman and Co-Chair Chessser, who additionally acknowledged the work done to this point by the TG. Mr. Schnepf also recommended withdraw of the item.

Mr. Fryburger (Southern Illinois Scale, representing the submitter) stated that he expects Rinstrum's system will soon be ready and available to demonstrate the claims regarding the performance of the system. Provided his expectation is realized, Mr. Fryburger recommended a Developing status.

During its work session, the Committee agreed to Withdraw the item based upon the length of time the proposal had been on the agenda. The Committee noted that a submission of a new proposal from the submitter would be welcome when the item is deemed ready to move forward.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, Mr. Vires, speaking on behalf of the SMA, did not support the proposal as written; the SMA has submitted written comments in opposition to this item. Mr. Barton informed the WWMA that a commitment made by the submitter to provide an opportunity to members of the TG to witness data collection that will provide evidence that their device is capable of meeting the NIST HB 44 Scales Code Class IIIL tolerances has not been met. As a member of the WIM TG, it is necessary to have evidence through the collection of test data showing that the submitter's device will meet the claimed performance and that the efforts of the TG are justified and worth continuing.

The WWMA recommends this item be withdrawn due to the lack of substantiated evidence that the submitter's claims of their device performance capabilities can be validated.

At the SWMA 2019 Annual Meeting, Co-Chair Chessser stated that the WIM Task Group is awaiting direction from the National S&T Committee on this item. Mr. Vires, speaking on behalf of the SMA stated that he opposes the item as written. Mr. Eric Golden (Cardinal Scale) asked if additional testing had been completed. Co-Chair Walker stated that additional testing had not yet been completed, and that they were currently waiting on direction from the chair of the National S&T Committee.

The SWMA recommends this item remain Assigned, while the WIM Task Group awaits further testing.

At the 2020 WWMA Annual Meeting, the WWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 SWMA Annual Meeting, the SWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the NEWMA 2019 Interim Meeting, the NEWMA agrees with the body that this item has merit and should remain Assigned. During CWMA Open Hearing, they heard comments from Mr. Dick Suiter (Richard Suiter Consulting) as a WIM Task Group member. He indicated that TG is waiting for more direction from S&T Committee. The major concerns are that test data given by submitter was not witnessed by a weights and measures official.

At the CWMA 2019 Interim Meeting, a member of the WIM Task Group indicated that the group is waiting on data from the submitter. We recommend this item remain assigned to the WIM task group.

At the 2020 NEWMA Annual Meeting, the NEWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

During the 2020 CWMA Annual Meeting the CWMA S&T Committee heard from both regulatory officials and industry representatives requesting this item be withdrawn for lack of progress. Mr. Loren Minnich (Kansas & NCWM S&T Chair) advised that Rinstrum, Inc. has been given a deadline of December 2020 to produce the data that has been requested by the WIM Task Group. We feel that due to a lack of progress on this item, the CWMA recommends the item be withdrawn.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

SCL-17.1 V S.1.8.5. Recorded Representations, Point of Sale Systems

(This item was adopted)

This item was designated as a "Voting" item by the Committee at the 2020 NCWM Interim Meeting. Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items were addressed in the subsequent 2021 NCWM Interim Meeting.

This item was presented for vote at the January 2020 NCWM Annual Meeting; however, it did not receive sufficient votes to pass or fail and was returned to Committee for additional work. During the 2021 NCWM Annual Meeting, the Committee agreed to amend the date of enforcement of the nonretroactive portion of the proposal from "2024" to "2025," as shown in the Item Under Consideration, and once again, present the item for vote. This was the only change made to the item following its return to the Committee at the 2020 NCWM Annual Meeting. The item, with this change, was then adopted at the 2021 NCWM Annual meeting.

Source:

Kansas and Minnesota

Purpose:

Provide consumers the same opportunity, to be able to easily verify whether or not tare is taken on items weighed at a checkout stand using a POS system, as has currently afforded them when witnessing items being weighed and priced in their presence using other scales in the store.

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

S.1.8.5. Recorded Representations, Point-of-Sale Systems. – The sales information recorded by cash registers when interfaced with a weighing element shall contain the following information for items weighed at the checkout stand¹:

- (a) the net weight;¹
- (b) the unit price;^{±2}

- (c) the total price; ~~and~~
- (d) the product class or, in a system equipped with price look-up capability, the product name or code number; ~~and~~

(e) the tare weight.

[Nonretroactive as of January 1, 2025]

(Amended 2021)

¹Weight values shall be **identified as tare and net, or gross if applicable. The unit of weight shall be** identified ~~by as~~ kilograms, kg, grams, g, ounces, oz, pounds, or lb. ~~The “#” symbol is not acceptable.~~
~~[Nonretroactive as of January 1, 2006]~~

²For devices interfaced with scales indicating in metric units, the unit price may be expressed in price per 100 grams.

(Amended 1995, ~~and~~ 2005, and 2021)

Background/Discussion:

This item has been assigned to the Point-of-Sale Tare Task Group (POST) for further development. For more information or to provide comment, please contact the task group chair:

Mr. Loren Minnich
Kansas Department of Agriculture
(785) 209-2780, loren.minnich@ks.gov

The submitters of this proposal state that it will benefit consumers by enabling them to see at a glance that tare is being taken on the commodities they purchase. It would also educate the public about tare and make them better and more aware consumers.

Additionally, it is purported that retailers would benefit because this proposal would aid their quality control efforts behind the counter and at the cash register. Retailers would be able to see that their employees are taking tare on packages, and that the tare employees take is the appropriate tare.

Finally, this proposal would aid weights and measures officials investigating complaints about net contents of item by creating written proof of how much tare was taken on a given package or transaction.

Scale manufacturers will need to modify software and label and receipt designs before the nonretroactive date. Retailers with point-of-sale systems and packaging scales may feel pressured to update software or purchase new devices in response to consumer demand for tare information on labels and receipts. The amount of paper needed to print customer receipts may increase depending on the formatting of the information and the size of the paper being used. Some retailers may not want consumers to have this information as it will allow consumers and weights and measures officials to hold them accountable and would be written proof tare was not taken when, and if, that happens.

During the 2018 NCWM Interim Meeting, the Committee heard from Mr. Loren Minnich (Kansas) who commented that the item will benefit consumers and asked the Committee to move the item forward as a voting item. Many comments both in support of and in opposition to the proposal were heard. The Committee also received a written recommendation asking the Committee to consider modifying the proposal to: (1) require the tare weight and/or the gross weight be printed on the receipt; (2) clarify printed weight values must be clearly and definitely identified as gross, tare, and/or net weights (as required by the General Code); and (3) move text currently in a footnote to the paragraph into the body of the paragraph for ease of reference.

During the Committee’s work session, the committee members reviewed all information received and agreed to move the item forward as a “Voting” item without change.

During the 2018 NCWM Annual Meeting, the Committee agreed to assign the further development of this item to an NCWM task group (TG) and established that the goal of this task group should be to determine how to provide

consumers (and operators) with the information necessary, whether on a receipt or displayed on the POS system itself, to verify that charges for items weighed at checkout are based on net weight, similar to the opportunity provided them by retail-computing scales used in direct sale applications.

The Committee also received several comments in opposition including a comment from Mr. Russ Vires (Mettler-Toledo, LLC), speaking on behalf of the SMA, stating that the SMA opposes the agenda item and feels it would be too costly to implement with little benefit. Additionally, the Committee received written comments including those from Ms. Elizabeth K. Tansing, on behalf of the Food Marketing Institute (FMI), opposing the item and requesting that the Committee withdraw the proposal. During the Committee's work session, the proposal was amended to only include changes to paragraph S.1.8.5. and to include a nonretroactive enforcement date of January 1, 2020.

The Committee received numerous comments on this item suggesting additional work is needed to further develop the proposal and recommending a new task group made up of regulatory officials, food marketing representatives, POS software programmers, NIST, and others. Two of the original submitters of the item, Ms. Julie Quinn (Minnesota) and Mr. Loren Minnich (Kansas) spoke in favor of assigning the item to a work group; one noting that the complexities of packaging are more involved today than first realized indicating the need for this proposal to be looked at more in depth.

The Committee also received numerous written letters from the grocery store industry opposing the item and requesting that the Committee withdraw it to include: the NC Retail Merchants Association, Florida Retail Federation, South Carolina Retail Association, Food Marketing Institute (FMI), and others. In consideration of the number of comments received on this item in support of its further development by a work group, the Committee agreed to recommend this item be assigned to an NCWM Task Group (TG).

See the S&T Committee's 2017 and 2018 Final Reports for additional details and background information relating to this item, including previous versions of the proposal. *Note: An earlier version of the proposal was presented for vote by the Committee during the 2017 NCWM Annual Meeting and failed to receive enough votes to pass and the item was returned to Committee. Additionally, this item appeared on the S&T Committee's agenda as 3200-3 in 2017 and SCL-7 in 2018.*

At the 2019 NCWM Interim Meeting, the Chairman of the NCWM POS Tare Task Group, Mr. Loren Minnich (Kansas), provided an update of the Task Group's activities since it first formed following the 2018 NCWM Annual Meeting. He reported the main topics of discussion thus far have been:

- whether the addition of proposed part (e) to paragraph S.1.8.5., which adds "tare weight" to the list of required information printed on a receipt should remain nonretroactive, as submitted, or be changed, per NIST OWM's suggestion, to retroactive with an effective date ten years from the date of adoption; and
- which value should be added to the receipt, "tare" or "gross" weight?

Mr. Minnich recommended this item remain in an Assigned status given members of TG have been unable to reach a consensus on these issues. Cost of compliance is a concern. The Committee, in consideration of the comments received on this item, agreed with the recommendation of the POS Tare TG Chairman to maintain the Assigned status of the item to allow the TG more time for further discussion and development.

During the 2019 NCWM Annual Meeting, the POS Tare TG Chairman provided the Committee with an update on the TG's progress and presented two amended versions of S.1.8.5. and associated footnotes for the Committee to consider. Those two versions are as follows:

RETROACTIVE VERSION:

S.1.8.5. Recorded Representations, Point-of-Sale Systems. – The sales information recorded by cash registers when interfaced with a weighing element shall contain the following information for items weighed at the checkout stand:¹

- (a) (a) the net weight;¹
- (b) the unit price;^{1,2}
- (c) the total price; and
- (d) the product class or, in a system equipped with price look-up capability, the product name or code number.

In addition, the tare weight shall be recorded by all cash registers interfaced with a weighing element for items weighed at the checkout stand as of January 1, 20XX.
(Amended 20XX)

NONRETROACTIVE VERSION:

S.1.8.5. Recorded Representations, Point-of-Sale Systems. – The sales information recorded by cash registers when interfaced with a weighing element shall contain the following information for items weighed at the checkout stand¹:

- (b) (a) the net weight;¹
- (b) the unit price;^{1,2}
- (c) the total price; ~~and~~
- (d) the product class or, in a system equipped with price look-up capability, the product name or code number; ~~and~~
(e) the tare weight.

[Non-retroactive as of January 1, 20XX]

(Amended 20XX)

FOOTNOTES 1 AND 2 FOR EITHER VERSION (RETROACTIVE OR NONRETROACTIVE)

¹Weight values shall be adequately defined as gross, tare, and/or net upon any two or more of these values appearing on the receipt. Acceptable abbreviations include, but are not limited to, G & GR (gross), T & TA (tare), and N & NT (net). The unit of weight shall be identified by as kilograms, kg, grams, g, ounces, oz, pounds, or lb. ~~The “#” symbol is not acceptable.~~
~~[Nonretroactive as of January 1, 2006]~~

²For devices interfaced with scales indicating in metric units, the unit price may be expressed in price per 100 grams.
(Amended 1995, ~~and~~ 2005, and 20XX)

***THE FOLLOWING TEXT CAN BE INSERTED AS REPLACEMENT TO THE ABOVE ONCE THE PRINTING OF THE TARE WEIGHT INFORMATION BECOMES ENFORCEABLE:**

¹Weight values shall be adequately defined as gross, tare, and/or net. Acceptable abbreviations include, but are not limited to, G & GR (gross), T & TA (tare), and N & NT (net). The unit of weight shall be identified by as kilograms, kg, grams, g, ounces, oz, pounds, or lb. ~~The “#” symbol is not acceptable.~~
~~[Nonretroactive as of January 1, 2006]~~

²For devices interfaced with scales indicating in metric units, the unit price may be expressed in price per 100 grams.
(Amended 1995, ~~and~~ 2005, and 20XX)

The Chair of the assigned TG reported that members of the TG believe both versions of the amended S.1.8.5. were fully developed, but they were unable to agree on which version should be presented for final consideration. Both

versions are being offered so that feedback can be solicited from the fall regional weights and measures associations. It is hoped this feedback will help the Committee to decide the most favorable version.

During the 2020 NCWM Interim Meeting, most comments received supported the nonretroactive version included in NCWM Publication 15 since it would allow the businesses affected to choose when to comply and provide the consumer confirmation that tare was taken. The Committee heard comments in opposition to the proposal from Mr. Russ Vires (SMA), believing the changes recommended would do little, if anything, to assist the consumer and that field officials are already performing inspections to verify that correct tare is taken in transactions where the item is sold by weight. Comments were also heard regarding the new abbreviations being proposed in this item. The concern was that they could be misinterpreted as something else (e.g., TA for taxable item). Mr. Tim Chesser (Arkansas) commented that he did not believe there was any significant benefit to the proposed changes, but added that identifying “gross,” “net,” or “tare” on a receipt using (respectively) “g,” “n,” or “t,” is not an acceptable means to identify these terms. Mr. Jim Willis (New York) stated his opposition to the proposal believing that adding tare to the customer’s receipt wouldn’t ensure that the tare deducted is correct if not verified.

During the 2020 Interim Meeting Open Hearings however, most comments received supported the nonretroactive version included in Pub 15 because it would allow the business affected to choose when to comply and would provide the consumer confirmation that tare was deducted.

NIST OWM did not offer any preference as to whether the “nonretroactive” or “retroactive” version of the proposal should be favored but noted it is important that the consumer be given the opportunity to verify items sold by weight are priced according to “net” weight. This is easily accomplished by including information on the receipt showing that tare had been deducted from the gross weight prior to calculating the total sale. NIST OWM acknowledged that not all consumers will have this concern when purchasing items sold by weight. However, those consumers who are interested in verifying the terms of sale must be afforded the information that will help them do this. NIST OWM also noted that opposition to this proposal had cited costs involved with compliance as one reason not to adopt it. However, NIST OWM noted it was not aware of any cost analysis that had been done to verify this claim.

Mr. Chesser noted that receipts provided from sales in some retail locations are exceedingly long and include extraneous information not relevant to the sale. If placing all of this information on the receipt is being done, how much effort and cost could it be to simply add a value for the tare weight used during the sale? Mr. Charles Stutesman (Kansas) stated his support for the nonretroactive version of the proposal and also questioned the claims of these changes being too costly to implement.

Ms. Fran Elson-Houston (Ohio) commented that devices that already have been given a NTEP Certificate of Conformance may need to undergo a subsequent evaluation since the changes in this proposal would be accomplished through software changes in those devices. Mr. Darrell Flocken (NTEP) stated that if the device/system is already calculating total sale prices, there would be no need to reevaluate the devices following the adoption of this proposal. Mr. Steve Harrington (Oregon) stated his concern for small retail operations that do not have the resources of the big chain stores to enable a quick change in their software. He would be more willing to support the proposal if there was consideration given to allow a more gradual phase-in period for compliance by smaller businesses.

Other regulatory officials voiced their support for the nonretroactive version of the proposal noting that small businesses would not immediately be affected. Mr. Loren Minnich (Kansas) stated that was the rationale behind the development of a nonretroactive version. He also stated that if the Committee agrees to move the nonretroactive version forward as a voting item, there will need to be an effective date assigned to the requirement.

During the Committee’s work session, the Committee assigned a voting status to the nonretroactive version below:

S.1.8.5. Recorded Representations, Point-of-Sale Systems. – The sales information recorded by cash registers when interfaced with a weighing element shall contain the following information for items weighed at the checkout stand¹:

- (a) the net weight;¹
- (b) the unit price;⁺²

- (c) the total price; ~~and~~
- (d) the product class or, in a system equipped with price look-up capability, the product name or code number; ~~and~~

~~(e) the tare weight.~~

~~[Nonretroactive as of January 1, 20XX]~~

~~(Amended 20XX)~~

¹Weight values shall be adequately defined as gross, tare, and/or net upon any two or more of these values appearing on the receipt. Acceptable abbreviations include, but are not limited to, G & GR (gross), & TA (tare), and N & NT (net). The unit of weight shall be identified by as kilograms, kg, grams, g, ounces, oz, pounds, or lb. The “#” symbol is not acceptable.
~~[Nonretroactive as of January 1, 2006]~~

²For devices interfaced with scales indicating in metric units, the unit price may be expressed in price per 100 grams.

(Amended 1995, ~~and~~ 2005, and 20XX)

During the discussion of this item at the 2020 NCWM Annual Meeting, the S&T Committee presented an amended version of the item which differed from the item included in the Committee’s 2020 Annual Meeting Agenda (i.e., NCWM Publication 16). This action was taken by the Committee to correct for an error in how the paragraph was presented in 2020 NCWM Publication 16. That is, the text in subpart (e) of the proposal, which was intended to be nonretroactive making it necessary for that portion of the paragraph to be presented in italics, was instead, presented in upright roman type in Publication 16. This incorrectly gave the impression that all parts of paragraph were intended to be nonretroactive.

The amended item presented during Open Hearing is as follows:

S.1.8.5. Recorded Representations, Point-of-Sale Systems. – The sales information recorded by cash registers when interfaced with a weighing element shall contain the following information for items weighed at the checkout stand¹:

- (a) the net weight;¹
- (b) the unit price;^{1,2}
- (c) the total price; ~~and~~
- (d) the product class or, in a system equipped with price look-up capability, the product name or code number; ~~and~~

(e) the tare weight.
[Nonretroactive as of January 1, 2024]
(Amended 2021)

¹Weight values shall be adequately defined as gross, tare, and/or net upon any two or more of these values appearing on the receipt. Acceptable abbreviations include, but are not limited to, G & GR (gross), T & TA (tare), and N & NT (net). The unit of weight shall be identified ~~by~~ as kilograms, kg, grams, g, ounces, oz, pounds, or lb. ~~The “#” symbol is not acceptable.~~
~~*[Nonretroactive as of January 1, 2006]*~~

²For devices interfaced with scales indicating in metric units, the unit price may be expressed in price per 100 grams.

(Amended 1995, ~~and~~ 2005, and 2021)

The amendments were made to italicize a portion of the requirement “(e),” as shown above, clarifying it as a nonretroactive portion of the paragraph, and to add the nonretroactive date, “2024,” that would make the item effective three years after adoption. The following comments were received during the Open Hearing session at the 2020 Annual Meeting regarding the amended item related to footnote one:

- the abbreviations of G or GR, N or NT, and T or TA were not descriptive enough and may lead to confusion;
- the phrase “adequately defined” may need to be replaced to more clearly require weight values to be classified as gross, net, or tare; and
- it is questionable whether to strike the statement prohibiting the # symbol to designate “pounds.”

These concerns were taken into consideration and footnote one was amended further by the Committee as shown below:

¹Weight values shall be identified as tare and net, or gross if applicable. The unit of weight shall be identified ~~by~~ as kilograms, kg, grams, g, ounces, oz, pounds, or lb. ~~The “#” symbol is not acceptable.~~
~~*[Nonretroactive as of January 1, 2006]*~~

There were comments received both in support and opposition of the adoption of this item. The following were cited as reasons to support adoption:

- In 1973 the S&T Committee expressed the opinion that the information available on a computing scale should also be available to the consumer when purchasing an item weighed at the checkstand (i.e., on a POS).
- There are already versions of POS software which are currently capable of including tare on the printed receipt.
- This change would provide consumers a record of the sale and the ability to determine if tare was deducted as required.
- The record of sales would provide weights & measures officials with additional information to investigate complaints related to net weight issues.
- Tare values are displayed on many stand-alone Retail Computing Scales during direct sales and consumers should have a similar opportunity to verify net weight on a POS used at the checkout.

- Tare inspections may or may not be a routine practice for all jurisdictions, and when programmed tare is checked by regulators there are frequent issues found.
- When items are weighed at the checkout station, the consumer is not normally provided an adequate opportunity to verify if they are charged the correct net weight because the weighing process occurs so quickly.
- Scales interfaced with cash registers typically provide a display of the live gross weight, but the weight value isn't identified as a gross weight which can be confusing to consumers.
- This change may be an incentive to retailers to keep tares updated correctly.
- Consumers that understand the weighing process would benefit from adding tare to the receipt giving them confidence that the item was sold by net weight.
- Marketing practices have changed in grocery stores and there are now multiple forms of packaging available which have various tare weights, the "standard" 0.01 lb tare is no longer sufficient by itself to ensure a net weight determination.
- Due to multiple values of tare used, additional challenges to correctly process a weighing transaction are involved including the following.
 - Some items may need multiple Product Look-Up (PLU) codes to properly determine net weight.
 - The tare for certain PLU's must be programmed to deduct the largest tare value to ensure sales by net weight.

A number of reasons were stated during the Committee's open hearing session in opposition for adoption including the following.

- Adding tare to the receipt may cause consumer confusion.
- There may be complaints received from consumers who think they were charged for tare.
- Adding tare won't benefit the consumer because weights and measures agencies already check tare during routine inspections and therefore tare values should be correct.
- No complaints have been cited regarding tare values not being included on the receipt.
- Including tare won't mean that the value is correct but including tare on the receipt may lead consumers to assume the weighing process was performed correctly.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items were addressed in the subsequent 2021 NCWM Interim Meeting.

The Committee received no additional comments on this item during the 2021 Interim Meeting open session. At the Committee's Interim Meeting work session, the Committee recognized this was the second time in January 2021 this item was considered. The Committee agreed to maintain the voting status believing that the last-minute changes made by the Committee during the 2020 Annual Meeting was the primary cause the item failed to be adopted during the Voting session.

Prior to vote at the 2021 NCWM Annual Meeting, the Committee agreed to amend the date of enforcement of the nonretroactive portion of the paragraph (i.e., subpart (e)) to 2025. The proposal, as shown in Item Under Consideration was presented for vote and adopted.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2018 Annual Meeting, Mr. Russ Vires (SMA) reported the SMA had provided a position from their 2019 April meeting stating that this proposal would provide little if any benefit to the consumer. Mr. John Barton (NIST OWM) stated that to not provide some indication to the consumer that tare has been taken violates the principle behind the General Code requirement G-S.5.1. That requirement states that weight indications for commercial transactions be clear, definite, and easily read. The consumer deserves to be assured that the commodity is being sold by net weight and that appropriate tare has been deducted. He also noted that the TG assigned to this item has offered two versions of the proposal. One is nonretroactive version and the other is a retroactive version. The Committee is encouraged to consider the implications of the status for the proposed requirement. The retroactive version will require that all POS systems comply with the requirement, and the nonretroactive version would allow those systems that are currently in service to be grandfathered. Mr. Kurt Floren (Los Angeles County, California) stated he supports the retroactive version of this proposal if it is not cost-prohibitive. However, he does oppose the item even if the proposal was adopted as nonretroactive. He also recommended that the term “defined” as it appears in both versions of this proposal should be replaced with “indicated” or “designated.” Mr. Steven Harrington (Oregon) stated he was concerned with the potential that smaller businesses will need to absorb the cost to comply with the requirement if the retroactive version was adopted.

The Committee agreed to support the nonretroactive version of this item as proposed in the item under consideration. The Committee also deliberated on the establishment of an effective date for the nonretroactive requirement. The Committee agreed to recommend that the effective date be January 1, 2024.

The Committee agrees that this item be given a voting status and recommends that additional input be solicited from the other regional associations and that input then be forwarded to the NCWM S&T Committee.

At the SWMA 2019 Annual Meeting, Mr. Russ Vires (SMA) opposed this item on the grounds that it provides no benefit to the consumer. The Committee recommends the nonretroactive version of this item be made a Voting Item.

At the NEWMA 2019 Interim Meeting, the Committee agrees with the body that the changes proposed are unnecessary and that the item should be withdrawn. During Open Hearings, the Committee heard from Mr. Jim Willis (New York), who believes the proposal will cause consumer confusion because while the tare is printed, there is no guarantee that it will be correct. Mr. John McGuire (New Jersey) agrees with the comments from New York.

At the 2020 WWMA Annual Meeting, the WWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 SWMA Annual Meeting, the SWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 NEWMA Annual Meeting, the NEWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the CWMA 2019 Interim Meeting, several comments were received in support of the nonretroactive version. There were suggestions that gross weight may be a better value to include since it could be clearer to consumers that they were charged on a net weight basis. We recommend the nonretroactive version move forward as a Voting item and suggest the Committee might consider replacing tare with gross weight.

At the 2020 CWMA Annual Meeting, the CWMA S&T Committee heard comments in opposition from the SMA. Many regulatory officials made comments in support of the item. The CWMA recommends the item moving forward as a Voting item with the proposed amendments by the NCWM S&T Committee.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

SCL-19.2 V UR.5. Coupled-in-Motion Railroad Weighing Systems.

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert's Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

(NOTE: This item replaces the 2018 Items, Block 2 items: SCL-1 & SCL-2, and 2017 individual Items 3200-4 and 3200-8. and was further amended in 2019 to remove:

- **T.N.3.6. Coupled-in-Motion Railroad Weighing Systems: a proposal to increase the tolerance for dynamic weighments of unit trains**
- **T.N.4.6. Time Dependence (Creep) and to provide an exception from "creep" tolerances for point based in motion railroad weighing systems.)**

Source:

Meridian Engineers Pty., Ltd.

Purpose:

Replace the 2018 Block 2 Items: SCL-1 and SCL-2 and now item number SCL-19.2 with new proposals to:

- a) Require the user of coupled-in-motion railroad weighing systems to provide a static scale in proximity for testing purposes, and
- b) Add a definition for Point-Based Railroad Weighing Systems to support those proposals.

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

UR.5. Coupled-in-Motion Railroad Weighing Systems

- (a) A coupled-in-motion weighing system placed in service on or after January 1, 1991, should be tested in the manner in which it is operated, with the locomotive either pushing or pulling the cars at the designed speed and in the proper direction. The cars used in the test train should represent the range of gross weights that will be used during the normal operation of the weighing system. Except as provided in N.4.2. Weighing Systems Placed in Service Prior to January 1, 1991 and Used to Weigh Trains of Ten or More Cars and N.4.3.(a) Weighing Systems Placed in Service on or After January 1, 1991, and Used to Weigh Trains of Ten or More Cars, normal operating procedures should be simulated as nearly as practical. Approach conditions for a train length in each direction of the scale site are more critical for

a weighing system used for individual car weights than for a unit-train-weights-only facility and should be considered prior to installation.

- (b) **For coupled-in-motion Point-based weighing systems used only for dynamic weighing, the user shall provide an alternate certified scale to be used as a reference scale. The weights and measures authority having jurisdiction over the weighing system shall determine if the reference scale provided is suitable in terms of size, capacity, minimum division, performance requirements, and the proximity to the weighing system under evaluation. The reference weight cars weighed on the reference scale may then be used for calibration and annual inspection by the jurisdiction with statutory authority for the system.**

(Added 1990) (Amended 1992 **and 2021**)

And add the following definition to NIST Handbook 44 Appendix D – Definitions:

point-based railroad weighing systems. – An In-Motion-Railroad Weighing System designed to weigh wheel(s) of a railway car when centered on the load sensor within a weighing zone typically of 2 inches or less. The weight of the wheels are added to obtain the total weight of the cars and train which are used for any transaction. [2.20]

Background/Discussion:

In 2017 the submitter, Meridian Engineers Pty Ltd. submitted two proposals. The first of those proposals was to amend the NIST Handbook 44 Scales Code, Table 3 “Parameters for Accuracy Classes” to reduce the required minimum scale division value for coupled-in-motion railroad weighing systems that are not used for static reference weighing. The second proposal sought to align the acceptance tolerance values and establish accuracy classes in NIST Handbook 44 Scales Code for coupled-in-motion railroad weighing systems to harmonize with OIML R106 “Automatic rail-weighbridges.”

At the 2017 NCWM Interim Meeting, the Committee grouped the two items in this proposal together and took comments on these items simultaneously since they were related. The submitter explained that due to the design and the technology used in their “point-based railroad weighing system” these systems would not comply with existing NIST HB 44 static scale tolerances. Meridian Engineers Pty Ltd. did maintain however, that these systems would be capable of meeting NIST HB 44 Scales Code Class III tolerances applicable to coupled-in-motion (CIM) railroad weighing systems.

The submitter also stated, the “pseudo load cells” used in Meridian’s systems are significantly different than a typical load cell used in many static and dynamic weighing systems in commercial service. For this reason, Meridian Engineers Pty Ltd. believed it would be unfair to evaluate their systems based on requirements pertaining to load cells already in the NIST HB 44 Scales Code. The submitter therefore solicited the NCWM to adopt the changes recommended in these proposals. Additionally, the proposed addition of multiple accuracy classes would align U.S. standards more closely with those in OIML R106.

At the 2017 NCWM Annual Meeting Open Hearings, the Committee grouped Agenda Items 3200-4 and 3200-8 together and took comments on those two items at the same time. A presentation was given by the item’s submitter, Mr. Anthony Pruiti (Meridian Engineers Pty Ltd.). The presentation provided an explanation for the changes being proposed and Meridian’s perspective supporting those changes. The changes, if adopted, would align the performance requirements corresponding to coupled-in-motion (CIM) railroad weighing systems in NIST HB 44 with those in OIML R 106 Automatic rail-weighbridges. OIML R106 provides multiple accuracy classes for CIM railroad weighing, whereas, NIST HB 44 currently provides only a single accuracy class. A few questions were asked following Mr. Pruiti’s presentation including:

- If this scale is not capable of meeting NIST HB 44, Table 3. Parameters for Accuracy Classes, what consequences can be expected by expanding the existing tolerances?
- What, and who will these changes benefit?

The Committee agreed to maintain the Developing status of this item based on the questions raised.

At the 2018 NCWM Interim Meeting, the Committee heard from Mr. Richard Suiter (Richard Suiter Consulting) representing Meridian Engineers Pty Ltd. (the submitter). Mr. Suiter asked that the item remain “Developing” because the submitter is working on changes which they plan to submit later this year. The NIST OWM offered the Committee written comments related to these items. Those NIST OWM comments are as follows.

- This item proposes four different accuracy classes for CIM railroad weighing systems and therefore a choice is necessary to determine a weighing system’s accuracy class that fits the intended application. The proposal, however, doesn’t provide any guidance on how this selection is to be made nor does it specify whom is to decide the appropriate accuracy class.
- This approach of specifying different accuracy classes in NIST HB 44 is based on the intended use rather than the scale’s level of precision and performance. That approach deviates significantly from how commercial and law-enforcement scales in the U.S. are typically selected today. Without any guidance concerning acceptable and unacceptable uses of the different accuracy classes specified, this proposal presents a potential conflict when deciding what is an appropriate weighing system for a given installation.

OWM’s written comments to the Committee stated that NIST OWM would need additional supporting data and information from the submitter of this item to be able to offer constructive feedback on the two proposals in this group that comprised the original proposal. NIST OWM elaborated by providing the following list of information needed:

- Clarification on whether the proposal is intended to include “uncoupled-in-motion railroad weighing systems.” Although the title of proposed paragraph T.N.3.6. is “Coupled-In-Motion Railroad Weighing Systems,” proposed new paragraph T.N.3.6.3. Wagon Weighing references both uncoupled and coupled “wagon” weighing. If the proposal is to include uncoupled wagon weighing, the title of T.N.3.6. would need to be changed. If not, then the reference to “uncoupled wagon weighing” in T.N.3.6.3. would need to be deleted. NIST OWM notes that if the proposal is intended to apply to uncoupled-in-motion railroad systems, the tolerances specified in the proposal far exceed the current NIST HB 44 tolerances specified in paragraph T.N.3.7. for this same application, which requires every weighment error to be within the static maintenance tolerance.
- Results of comparison tests (using reference cars weighed as a single draft on an accurate static railroad track scale) that provide true indication of the accuracy of the Meridian system.
- The rationale for the changes proposed to footnote 3 of Table 3.
- Clarification of how the tolerance values in proposed Table T.N.3.6. are calculated for both wagon weighing and train weighing on both initial and subsequent verifications based on the criteria specified in proposed paragraph T.N.3.6.3. and T.N.3.6.4. Perhaps an example of the tolerance calculations for both wagon weighing, and train weighing would be helpful to clarify the application of these tolerances.
- A list of the different qualifying applications in which the proposed four accuracy classes of a coupled-in-motion railroad weighing system could be used.

NIST OWM noted that while it is supportive of wanting to harmonize U.S. and international standards when it makes sense to do so, it views this proposal as an attempt to increase the allowable tolerance on individual railcars weighed coupled-in-motion to pave the way for the use of railroad weighing systems installed on continuous rail. We question the reasonableness of increasing current NIST HB 44 tolerances to allow for the use of less accurate commercial equipment given that existing commercial equipment is able to perform to within the current tolerances specified.

At the 2018 NCWM Annual Meeting, the Committee did not take comments during Open Hearings on Developing items except to grant the submitter of a Developing item (or block of Developing items) an opportunity to provide an update on the progress made to further develop the item(s) since the 2018 NCWM Interim Meeting. Mr. Richard Suiter (Richard Suiter Consulting), serving as consultant to Meridian Engineers Pty Ltd., provided an update to the Committee on this block of items. He reported Meridian is still working on these items in hopes of having a proposal developed for consideration at the 2019 NCWM Interim Meeting.

In written comments to the Committee, the SMA recommended the withdrawal of this proposal. The current standards have been in effect for years, there are a number of devices that comply with the current standards, and the SMA does not feel lowering the standard is in the best interest of the weights and measures community. In addition, the SMA feels that adding additional classes with larger tolerances would cause confusion in the marketplace.

The Committee agreed to carryover this proposal on its 2019 Agenda by assigning it a developing status to provide the submitter additional time to develop the items.

During the 2019 NCWM Interim Meeting, the Committee heard a presentation from Mr. Suiter, representing the submitter. The presentation provided an overview of the design and operation of an in-motion railway track scale the presentation defined as a “Point Based System.” The presentation showed that the system uses a strain gage-based sensing device that is mounted directly to the rail. At the conclusion, Mr. Suiter suggested that the item was ready to be assigned a voting status.

The Committee also heard comments from the SMA opposing the item as it increases the current tolerance values relative to similar types of devices as well as providing less stringent specification requirements. In view of these changes, the SMA recommended the item be withdrawn. Representatives from Systems Associates, Inc. and Schenck Process, LLC. voiced opposition to the proposal primarily due to the increase of the tolerance values. They commented that there are current systems in use today that meet existing tolerances and for this reason do not feel it is appropriate to increase tolerance values for one manufacturer.

During the Committee’s work session, the Committee members discussed the need to include a statement related to the selection and requirements of a reference scale for use during the testing of an instrument that is only capable of dynamic weighing. The Committee revised UR.5.(b) of the original proposal (revised version shown in the Item Under Consideration) to state that the determination of the reference scale selection was within the authority of the jurisdiction having statutory authority for the system. The revised version accepted by the Committee is as shown in the Item Under Consideration. With the inclusion of these amendments to the proposal, the Committee designated the item a voting status.

At the 2019 NCWM Annual Meeting, the Committee heard comments from Mr. Suiter representing the submitter. Mr. Suiter requested the proposal be amended to delete the changes proposed to paragraphs TN.3.6., TN.3.6.1. and TN.4.6. The amended proposal would then include only changes proposed to paragraph UR.5.(b). and the addition of a new definition for “point-based railroad weighing systems” in NIST HB 44 Appendix D. The Committee agreed to delete changes proposed to TN.3.6. and TN.3.6.1. and TN.4.6. as requested by submitter. The Committee also decided to change the status of the proposal from “Voting” to “Informational” and to seek input from the regional associations on remaining portions (UR.5.b. and the definition for point-based railroad weighing systems) of this proposal.

At the 2020 NCWM Interim Meeting, several comments were heard during the Open Hearing session referring to the title of the proposal as listed in the meeting agenda. Those comments noted that the current item under consideration did not include all of the listed requirements to be amended that are included in the meeting agenda.

Mr. Steve Beitzel (Systems Associates) noted that the submitter has stated these systems are for dynamic weighing only and if this proposal goes forward, the user requirement as shown in the item under consideration must not be misunderstood to apply to static weighing systems. He also felt the last sentence UR.5. (b) was poorly worded, that the definition isn’t necessary but if it is put in that the 2-inch number may not be the right number, and that the last sentence in the definition should be reworded.

NIST OWM commented that the most recent change to this proposal (made during the 2019 NCWM Annual Meeting) does not add any new or significant information since the regulatory official has always been charged with making the determination of whether a reference scale is suitable or not. The addition of the term “point-based railroad weighing systems” gives the appearance of only providing a justification for including the proposed and recently added definition to this item in NIST HB 44. NIST OWM also questioned if these systems will be subject to Verified Conformity Assessment Program (VCAP) requirements through NTEP as are load cells. Since these systems cannot technically be considered load cells since they are simply a strain gauge attached to existing railroad rail. Mr. Russ Vires (Mettler-Toledo) agreed with NIST OWM’s statements. Other commenters recommended this item move forward as a Voting item.

Mr. Suiter (representing the submitter) explained to the Committee the process that was followed to obtain a NTEP Certification for the “point-based railroad weighing systems.” This process involved submitting the strain gauge components of this system mounted on sections of railroad rail that were tested in the labs environmental chambers. He reported that the system passed the tests performed and that the only step left before the system could be approved was a field test. Mr. Darrell Flocken (NTEP Administrator) confirmed this and added that this system is required to meet the same requirements as any load cell submitted for type approval. NIST OWM’s recommendation was that the Committee carefully consider these questions.

During its work session, the Committee agreed to amend the title of the proposal to reflect the withdrawal, by the submitter, of two sections of NIST HB 44 Scales Code which were included in the initial proposal. The Committee also agreed to assign a Voting status to the item as amended.

The following is the item, as amended, included on the S&T Committee Agenda as SCL-19.2 for consideration during the 2020 Annual Meeting:

UR.5. Coupled-in-Motion Railroad Weighing Systems.

(a) A coupled-in-motion weighing system placed in service on or after January 1, 1991, should be tested in the manner in which it is operated, with the locomotive either pushing or pulling the cars at the designed speed and in the proper direction. The cars used in the test train should represent the range of gross weights that will be used during the normal operation of the weighing system. Except as provided in N.4.2. Weighing Systems Placed in Service Prior to January 1, 1991 and Used to Weigh Trains of Ten or More Cars and N.4.3.(a) Weighing Systems Placed in Service on or After January 1, 1991, and Used to Weigh Trains of Ten or More Cars, normal operating procedures should be simulated as nearly as practical. Approach conditions for a train length in each direction of the scale site are more critical for a weighing system used for individual car weights than for a unit-train-weights-only facility and should be considered prior to installation.

(b) For coupled-in-motion Point-based weighing systems used only for dynamic weighing, the user shall provide an alternate certified scale to be used as a reference scale. The weights and measures authority having jurisdiction over the weighing system shall determine if the reference scale provided is suitable in terms of size, capacity, minimum division, performance requirements, and the proximity to the weighing system under evaluation. The reference weight cars weighed on the reference scale may then be used for calibration and annual inspection by the jurisdiction with statutory authority for the system.

(Added 1990) (Amended 1992 and 20XX)

And add the following definition to NIST Handbook 44 Appendix D – Definitions:

Point-based railroad weighing systems. – An In-Motion-Railroad Weighing System designed to weigh wheel(s) of a railway car when centered on the load sensor within a weighing zone typically of 2 inches or less. The weight of the wheels are added to obtain the total weight of the cars and train which are used for any transaction.

Below is the item as presented during the S&T Committee Open Hearing at the 2020 Interim meeting:

UR.5. Coupled-in-Motion Railroad Weighing Systems. –

(a) A coupled-in-motion weighing system placed in service on or after January 1, 1991, should be tested in the manner in which it is operated, with the locomotive either pushing or pulling the cars at the designed speed and in the proper direction. The cars used in the test train should represent the range of gross weights that will be used during the normal operation of the weighing system. Except as provided in N.4.2. Weighing Systems Placed in Service Prior to January 1, 1991 and Used to Weigh Trains of Ten or More Cars and N.4.3.(a) Weighing Systems Placed in Service on or After January 1, 1991, and Used to Weigh Trains of Ten or More Cars, normal operating procedures should be simulated as nearly as

practical. Approach conditions for a train length in each direction of the scale site are more critical for a weighing system used for individual car weights than for a unit-train-weights-only facility and should be considered prior to installation.

(b) For coupled-in-motion weighing systems used only for dynamic weighing, the user shall provide an alternate certified scale to be used as a reference scale. The weights and measures authority having jurisdiction over the weighing system shall determine if the reference scale provided is suitable in terms of size, capacity, minimum division, performance requirements, and the proximity to the weighing system under evaluation. The reference weight cars weighed on the reference scale may then be used for calibration and annual inspection by the jurisdiction with statutory authority for the system.

(Added 1990) (Amended 1992 **and 20XX**)

And add the following definition to NIST Handbook 44 Appendix D – Definitions:

Point-based railroad weighing systems. – An In-Motion-Railroad Weighing System designed to weigh wheel(s) of a railway car when centered on the load sensor within a weighing zone typically of 2 inches or less. The weight of the wheels are added to obtain the total weight of the cars and train which are used for any transaction.

During the discussion of this item at the 2020 NCWM Annual Meeting Open Hearing session, the S&T Committee presented an amended version of the item which differed from the item included in Publication 16. The amended item presented during the Open Hearing is shown below:

UR.5. Coupled-in-Motion Railroad Weighing Systems

(a)...

(b) For coupled-in-motion Point-based weighing systems used only for dynamic weighing, the user shall provide an alternate certified scale to be used as a reference scale. The weights and measures authority having jurisdiction over the weighing system shall determine if the reference scale provided is suitable in terms of size, capacity, minimum division, performance requirements, and the proximity to the weighing system under evaluation, in accordance with the principles stated in Appendix A, Section 3. Testing Apparatus. The reference weight cars weighed on the reference scale may then be used for calibration and annual inspection by the jurisdiction with statutory authority for the system.

And add the following definition to NIST Handbook 44 Appendix D – Definitions:

point-based railroad weighing system. – A coupled-in-motion weighing system designed to determine unit-train-weights by dynamically weighing the wheel(s) of a railway car when centered on the load sensor within a weighing zone typically of 2 inches or less.

The changes to the Item Under Consideration, as presented in Publication 16, were recommended by the Committee to address the following points.

- Concerns that this type of device could be used to weigh statically in a commercial application which is contrary to the submitter's statements.
- The jurisdiction having authority over the scale may not consider NIST Handbook 44 Appendix A when accepting a device as a suitable reference scale.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items, this being one, were addressed. All other items were addressed in the subsequent 2021 NCWM Interim Meeting.

During the Open Hearing session at the 2020 Annual Meeting the following comments were received:

- This item's only purpose is to add the definition for "point-based railroad weighing system" to the NIST Handbook 44 by inserting that term in the amended user requirement. Also, the user's requirement UR.5. subpart (b) doesn't add any useful information that isn't already covered in the General Code (G-UR.4.4.)
- There has not been any data presented indicating that these systems have the capacity to statically weigh the required test load for reference cars.
- The requirements for a reference scale should provide specific, and uniform direction and should not be arbitrarily decided by "the jurisdiction with statutory authority." Requirements for traceability and accuracy are specified in NIST Handbook 44 Appendix A "Fundamental Considerations" and should be followed.
- A question was asked if the definition and the criteria for determining a suitable reference scale are necessary content for NIST Handbook 44? If that information is added to the Scales Code will it need to be added to other NIST HB 44 specific device codes requiring test loads to be verified using reference scales?

Mr. Suiter, representing Meridian Engineers Pty., Ltd, gave a presentation to address concerns related to the scale being used to weigh statically. The presentation focused on the device's ability to be tested statically allowing it to be used to weigh reference weight cars to be used during dynamic testing.

Mr. Charles Stutesman (Kansas) asked the Committee if the amended version was submitted to all four regional associations for consideration. (It was, yet it was not considered by all regions.) Although Mr. Stutesman was not in favor of adoption, he believed that the item was fully developed and should be presented for a vote.

The Committee received no additional comments specifically addressing the merits of the Committee's proposed amendments. Because that amended version was only considered by one region the Committee presented the original version as found in Publication 16 as the Item Under Consideration for a vote. This item was adopted during the 2020 NCWM Annual Meeting held in January 2021.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, prior to the 2019 WWMA Annual Meeting, the submitter provided a written recommendation to amend the proposed new subparagraph, UR.5.b. by adding the terminology of "point-based railroad weighing system" to that paragraph and to also include the definition in NIST HB 44 Appendix D for "point-based railroad weighing system."

The Committee heard comments from Mr. Russ Vires (SMA) stating opposition to this item pointing out the initial proposal's increase of tolerances for this type of device. Mr. Eric Golden (Cardinal Scale) stating that this proposal has been in the agenda for quite some time and that the submitter has amended the proposal by removing several of the elements that were included in the initial proposal. Cardinal is opposed even though that the proposal contains less changes than originally presented. Mr. Golden also requested that clarification be made of the phrase "reference scale in close proximity."

Mr. John Barton (NIST OWM) stated that the proposal has been pared down and that the user's requirement included in the current version of the proposal adds nothing since the regulatory official already possesses the authority to declare a reference scale as appropriate. Also, if the user requirement is omitted, then the definition for "point-based railroad weighing systems" is not needed.

Mr. Steven Harrington (Oregon) commented that considerable angst has been removed from this proposal given that many of the original changes in the proposal have been deleted.

The Committee agreed this proposal as amended by the submitter has merit and to also recommend a Voting status for the item. The Committee also recommends that this proposal's purpose be modified to only include the changes being suggested to add new subparagraph UR.5.b. and the definition for "point-based railroad weighing systems" in NIST HB 44 Appendix D.

At the SWMA 2019 Annual Meeting, Mr. Vires (SMA) opposed the item because he believes the current standards are fine. Mr. Suiter (representing Meridian Engineering) stated that Meridian Engineering withdrew this item in July and has since removed the Creep Test and Tolerance changes from the item. He also stated that he believes the item should be made into a Voting Item with the term "Point-Based" added to UR.5.b., and also the following definition of Point-Based to NIST HB 44:

UR.5.

(b) For coupled-in-motion Point-Based weighing systems used only for dynamic weighing, the user shall provide and alternate certified scale to be used as a reference scale. The weights and measures authority having jurisdiction over the weighing system shall determine if the reference scale provided is suitable in terms of size, capacity, minimum division, performance requirements, and the proximity to the weighing system under evaluation. The reference weight cars weighed on the reference scale may then be used for calibration and annual inspection by the jurisdiction with statutory authority for the system.

(Added 1990) (Amended 1992 and 20XX)

Mr. Tim Chesser (Arkansas) stated that he supports moving this forward as a Voting Item. Mr. Golden pointed out that the post-July changes that Mr. Suiter laid out were still included in our copy of the item on S&T p.20 Lines 4 and 5 and should have been removed.

The Committee recommends this item be moved forward as a Voting Item with the language corrected as described.

At the NEWMA 2019 Interim Meeting, the Committee agrees with the body and finds merit in this item, sees it as fully developed and recommends it be assigned Voting status. Mr. Suiter commented on behalf of submitter, Meridian Engineers, and provided a written statement that is included in the Appendix.

At the CWMA 2019 Interim Meeting, Mr. Suiter provided written comments suggesting the above amendments to the item, including updating the title and purpose to reflect the removal of items from the proposal and adding the term "Point-based railroad" to UR.5.(b). We recommend the item move forward as a voting item with these amendments.

At the WWMA 2020 Annual Meeting, this item was not considered due to the constraints of holding a virtual meeting.

At the SWMA 2020 Annual Meeting, this item was not considered due to the constraints of holding a virtual meeting.

At the NEWMA 2020 Interim Meeting, this item was not considered due to the constraints of holding a virtual meeting.

At the CWMA 2020 Interim Meeting, the CWMA S&T committee heard only comments in opposition to this item from the SMA, NIST OWM, and state regulators. The CWMA S&T Committee feels this item, with the proposed amendments by the NCWM S&T Committee, is developed to the extent that it can be and recommends this item move forward as a Voting item.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

SCL-20.1 W N.1.12. Reducing Rounding Error, T.1. General, T.N.2.1. General.

(NOTE: At the 2020 NCWM Interim Meeting the Committee agreed to remove this item from Block 2 and withdraw it from consideration.)

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

N.1.12. Reducing Digital Rounding Error. – When verifying devices with digital indication, the rounding error resulting from rounding the indication to the nearest digital division shall be reduced whenever the scale division d is greater than 0.2 e. Reduction shall be made using error weights or other means. This shall not apply to field verifications when environmental conditions make the error determination to at least 0.2 e unreliable.

T.1. General. – The tolerances applicable to devices not marked with an accuracy class shall have the tolerances applied as specified in Table T.1.1. Tolerances for Unmarked Scales. **The tolerances hereinafter prescribed shall be applied equally to errors of overregistration and errors of underregistration with the weighing device adjusted to zero at no load. When tare is used, the tolerance values are applied from the tare zero reference (zero net weight indication); the tolerance values apply to the net weight indication for any possible tare load using certified test loads.**

(Amended 1990 **and 20XX**)

T.N.2.1. General. – The tolerance values ~~are positive (+) and negative (–)~~ **hereinafter prescribed shall be applied equally to errors of overregistration and errors of underregistration** with the weighing device adjusted to zero at no load. When tare is used, the tolerance values are applied from the tare zero reference (zero net weight indication); the tolerance values apply to the net weight indication for any possible tare load using certified test loads.

(Amended 2008 **and 20XX**)

At the 2020 NCWM Interim Meeting, the Committee acknowledged written comments from the submitter of the items then included in Block 2 and heard comments during the Open Hearing session on those items. Mr. Constantine Cotsoradis (Flint Hills Resources) and Mr. Russ Vires (SMA) representing interests from an industry perspective questioned the need for the changes being proposed in this block of items. Additional comments from regulatory officials indicated that the changes included in this proposal were not successful in clarifying NIST HB 44 requirements and possibly added to any confusion that exists. Mr. Steve Cook (retired CA DMS) pointed out that the changes ignored weighing devices that did not fall under Accuracy Class I or II and stated his willingness to work with the submitter to further develop the proposal.

Several other comments heard during Open Hearings indicated that it is questionable to give consideration to all of the individual items that are shown as part of Block 2. Comments from SMA, and some regulatory officials recommended that this Block of items be separated since not all items now grouped under Item Block 2 seem to be closely related. Mr. Kurt Floren (LA County, California) also pointed out that some of the proposed amended language is not clear and will add to confusion in interpretation of requirements and that there are some editorial corrections and proper formatting needed in this proposal as well.

NIST OWM commented that while most of the proposed changes seem to be fundamentally sound, the urgent need to implement some of those proposed changes is not clear. NIST OWM also agreed with other comments that recommend separating the items under Block 2 into individual items or grouped together where items are more clearly related. NIST OWM notes that item SCL-20.2 now included in Block 2 is clearly related to two other items individually listed on the S&T Committee’s agenda; SCL-20.10 and SCL-20.11. Additionally, NIST OWM believes that the determination of individual Scales Code requirements intended to apply to either “e” or “d” should be carefully considered on a case-by-case basis. Also recommended was that additional input be solicited from stakeholders (industry officials and device manufacturers in particular) prior to adopting any changes based on this proposal.

During the Committee’s work session, the Committee agreed that some of the items combined under Block 2 should be separated. The Committee agreed that items GEN-20.1, SCL-20.1, and SCL-20.2 should be removed from Block 2 and given individual consideration. During the 2020 NCWM Interim Meeting, there were no comments specifically directed to this item within the Block 2 proposal. The Committee did not recognize any urgent need to implement the changes recommended in this item and therefore agreed to withdraw this item.

SCL-20.2 W Verification Scale Division**Item Under Consideration:**

Amend NIST Handbook 44, Scales Code as follows:

(Note: At the 2020 NCWM Interim Meeting the Committee agreed to remove this item from Block 2 and withdraw it from consideration.)

S.1.2.2. ~~Verification Scale Interval~~ Scales with e Not Equal to d.

Move S.1.2.2.2. to Section 3 of the user requirements (or delete it) and renumber subsequent paragraphs.

Option 1. Move S.1.2.2.2. to User Requirements Section 3.

S.1.2.2.2. UR.3.X. Class I and II Scales Used in Direct Sales. – *When accuracy Class I and II scales are used in direct sale applications the value of the displayed division “d” shall be equal to the value of the verification scale interval “e.”*

[Nonretroactive as of January 1, 2020; to become retroactive as of January 1, 2023]

(Added 2017) **(Amended 20XX)**

Option 2. Delete S.1.2.2.2. and renumber

~~S.1.2.2.2. Class I and II Scales Used in Direct Sales.~~ – *~~When accuracy Class I and II scales are used in direct sale applications the value of the displayed division “d” shall be equal to the value of the verification scale interval “e.”~~*

~~*[Nonretroactive as of January 1, 2020; to become retroactive as of January 1, 2023]*~~

~~**(Added 2017)**~~

At the 2020 NCWM Interim Meeting, the Committee acknowledged written comments from the submitter of the items then included in Block 2 and heard comments during the Open Hearing session on those items. Mr. Cotsoradis and Mr. Russ Vires (SMA) representing interests from an industry perspective questioned the need for the changes being proposed in this block of items. Additional comments from regulatory officials indicated that the changes included in this proposal were not successful in clarifying NIST HB 44 requirements and possibly added to any confusion that exists. Mr. Steve Cook (retired, California Division of Measurement Standards) pointed out that the changes ignored weighing devices that did not fall under Accuracy Class I or II and stated his willingness to work with the submitter to further develop the proposal.

Several other comments heard during Open Hearings indicated that it is questionable to give consideration to all of the individual items that are shown as part of Block 2. Comments from SMA, and some regulatory officials recommended that this Block of items be separated since not all items now grouped under Block 2 seem to be closely related. Mr. Kurt Floren (Los Angeles County, California) also pointed out that some of the proposed amended language is not clear and will add to confusion in interpretation of requirements and that there are some editorial corrections and proper formatting needed in this proposal as well.

NIST OWM commented that while most of the proposed changes seem to be fundamentally sound, the urgent need to implement some of those proposed changes is not clear. NIST OWM also agreed with other comments that recommend separating the items under Block 2 into individual items or grouped together where items are more clearly related. NIST OWM notes that item SCL-20.2 now included in Block 2 is clearly related to two other items individually listed on the S&T Committee’s agenda; SCL-20.10 and SCL-20.11. Additionally, NIST OWM believes that the determination if individual Scales Code requirements are meant to apply to either “e” or “d” should be carefully considered on a case-by-case basis. Also recommended was that additional input be solicited from stakeholders (industry officials and device manufacturers in particular) prior to adopting any changes based on this proposal.

During the Committee’s work session, they agreed that some of the items combined under Block 2 should be separated. The Committee agreed that items GEN-20.1, SCL-20.1, and SCL-20.2 should be removed from Block 2 and given individual consideration. The Committee heard testimony relative to items SCL-20.10 and SCL-20.11 which address the same issue. Most comments received were in favor of option 2 (above) in this proposal which was effectively the same as another item on its agenda - SCL-20.10. There were no comments specifically directed to this item within the Block 2 proposal. This specific item was very similar to other individual items on the 2020 Interim Meeting’s agenda (SCL-20.10 and SCL-20.11) and the Committee determined SCL-20.2 was not needed. During the Committee’s 2020 work session, the Committee chose to withdraw the item.

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

SCL-20.9 D S.1.1.3. Zero Indication, Load Receiving Elements Separate from Weighing Elements. and Appendix D – Definitions: no load reference value

Source:

Kansas Department of Agriculture

Purpose:

Facilitate more accurate net weight determinations for systems utilizing a load-receiving element separate from a weighing element.

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

S.1.1.3. Zero Indication, Load-Receiving Elements Separate from Weighing Elements. – Provisions shall be made to indicate and record a no-load reference value and, if the no-load reference value is a zero-value indication, to indicate and record an out-of-balance condition on both sides of zero.

(Nonretroactive as of January 1st, 20XX)

S.1.1.3.1. Weighing Sequence. – For weighing systems used to receive (weigh in), the no-load reference value shall be determined and recorded only at the beginning of each weighing cycle. For systems used to deliver (weigh out), the no-load reference value shall be determined and recorded only after the gross load reference value for each weighing cycle has been indicated and recorded.

(Nonretroactive as of January 1, 20XX)

S.1.1.3.2. Recording Sequence. – Provision shall be made so that all weight values are indicated until the completion of the recording of the indicated value.

(Nonretroactive as of January 1, 20XX)

S.1.1.3.3. Zero-Load Adjustment. – The weighing system shall be equipped with manual or semiautomatic means by which the zero-load balance or no-load reference value indication may be adjusted. Automatic zero-tracking and automatic zero-setting mechanisms are prohibited.

(Nonretroactive as of January 1, 20XX)

And amend Appendix D – Definitions as follows:

no-load reference value. – A positive or negative weight value indication with no load in the load-receiving element of a scale. ~~(Used with automatic bulk weighing systems and certain single draft, manually operated receiving hopper scales installed below grade and used to receive grain.)~~ [2.20, 2.22]

Background/Discussion:

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Loren Minnich
 Kansas Department of Agriculture
 (785) 564-6681 loren.minnich@ks.gov

There are many devices currently in use that, when not returned to zero, produce an inaccurate weighment. For example, a hopper scale used to weigh aluminum cans. The hoppers of these scales tend to become very sticky from residue and cans may stick to the side. When the indicator doesn't return to zero the operator will typically re-zero the scale to begin the next weighment. If the operator doesn't notice the device didn't return to zero, they may pay for the same cans more than once. If the device is re-zeroed with the can still stuck and it is knocked loose later, the customer may be paid for less material than they brought to the facility if the operator doesn't notice the indicator is below zero. If properly operated, a system utilizing a load-receiving element separate from a weighing element can be used to determine an accurate net weight.

In some cases, the load receiving element of a scale will retain materials (in the case of a hopper scale often referred to as the "heel"). This is typically a positive value but if the operator manually re-zero's the indicator and the material is subsequently cleared this can result in a negative value and should be accounted for when determining a net weight.

At the 2020 NCWM Interim Meeting Open Hearing session, the submitter stated the intent of this item was directed towards weighing systems utilizing hoppers and tanks and that his understanding of the NIST OWM analysis is that the intent of the proposal may not have been clear and will work towards clarifying the purpose of the item. He requested the Committee assign a Developing Status. A representative of the NIST OWM indicated he had discussed the item with the submitter and is willing to work with him to assist in the development of the item.

A representative of the SMA commented that their group is opposed to the item because the intent is not understood.

During the Committee's work session, the Committee assigned this item a Developing status.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items were addressed in the subsequent 2021 NCWM Interim Meeting.

At the 2021 NCWM Interim Meeting, the Committee heard testimony in the open hearing session from Mr. Loren Minnich (Kansas, submitter) stating that this proposal would replace another proposal from this submitter (ABW-16.1) which the submitter is recommending be withdrawn. Mr. Minnich recommended an Information or Developing status for this item. Mr. Russ Vires (SMA) stated that the SMA takes no position on this item. Mr. Kevin Schnepf (California) supports a Developing status for the item.

During its work session, the Committee recommended the submitter continue to work with NIST OWM to further develop this item and agreed the item should remain as a Developing status.

At the 2021 NCWM Annual Meeting the Committee heard from Mr. Minnich who noted that the current Item under Consideration is not the latest version. Mr. Minnich noted that he would submit the latest draft to the Committee.

During the Committee's 2021 Annual Meeting work session, the Committee made no changes to the status of the item and agreed the item should remain in a developing status.

NIST OWM believes this proposal to be the second of two that have been submitted by the State of Kansas to address, what we believe are the same concerns pertaining to hopper scale systems. The other item (ABW-16.1) proposes changes to the ABWS Code of NIST Handbook 44. If our interpretation is correct, might Kansas decide which proposal they prefer to advance forward for consideration and then recommend to the Committee withdrawing the other.

NIST OWM recognizes that there are some weighing systems that operate autonomously following an initial action by the operator to start the process. It is our understanding this proposal is intended to address hopper scale systems designed to be operated in an automatic mode to weigh and discharge successive drafts of product in bulk to either:

- a. achieve some targeted amount entered into the system by its operator; or
- b. provide a summed total of some unknown amount of product needing to be weighed in multiple drafts due to the limited capacity of the hopper.

Although similar in operation to an automatic bulk weighing system, we believe some of the hopper scale systems this proposal is intended to address are designed to weigh more than a single product; that is, a combination of different products comprised of the individual ingredients that form a recipe. Some of these products may be weighed on a separate scale or measured by a meter upstream of and prior to being conveyed into the hopper scale to ensure proper proportion to the overall recipe. Generally, however, it is the hopper scale that determines the final weight of the mixture in each draft that makes up a particular targeted amount or load. There exists varying designs of these systems and the arrangement of the different weighing and/or measuring devices used to weigh/measure the different individual ingredients included in the installation also varies with the design of the system.

This proposal seems to address only one particular type of hopper scale system with automatic operation. That is, one which records the no-load starting or no-load ending reference (depending on its use as a weigh-in or weigh-out system) and determines from subtraction the net weight of each draft and then provides a summed total. Not all hopper scale systems equipped with automatic operation, however, are designed to function in this manner. There exists some hopper scale systems with automatic operation designed with an interlock, which prevents a subsequent draft from being initiated until all of the product in the previous draft has been discharged and the scale returned to a zero-load balance condition. With these systems, there is no subtraction of the starting or ending reference from the weight of the draft load in the hopper because for each draft, the scale starts the weighing process with the scale displaying zero and no product in the hopper. A very important consideration during field inspection of these systems is to verify proper operation of the interlock system during automatic operation. Additionally, for these systems, the owner/operator is required to maintain the hopper scale system on zero at all times in accordance with Scales Code paragraph UR.4.1. Balance Condition. This, however, would not be necessary with respect to a hopper scale system that determines the amount of each draft load by recording the starting no-load or ending no-load reference and subtracts to determine the net weight of each draft.

We believe the operational differences in the two designs we've described to be significant enough to warrant a proposal that clearly distinguishes between the two and includes proposed changes and added paragraphs to address each separately. We encourage the submitter to continue developing this item to adequately address either design.

A point we wish to make clear is that we believe it is unnecessary and inappropriate to require a no-load starting and/or no-load ending reference be recorded by a hopper scale system when designed with a functioning interlock that prevents the next subsequent draft load from being initiated until all product comprised of a previous draft load has been discharged from the hopper and the scale has returned to zero.

For the sake of consistency in testing, we think part of the discussion in the development of this item going forward should be whether or not each individual scale and meter comprised of a system would need to be tested by officials. We note that some recipes may produce a final product offered for sale as certified through some form of guaranteed analysis. In this case, some jurisdictions may conclude all of the individual scales and meters may not need to be certified. If it is agreed that the individual scales and meters installed in a system need to be tested along with the hopper scale, new test procedures will likely need development to address the testing of the individual scales installed in those systems.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, the Committee recognized this as a new proposal and that there were no comments heard on the item during the open hearings. Due to the lack of comments regarding this proposal, the Committee does not offer any recommendation for its status.

At the SWMA 2019 Annual Meeting, the Committee has decided to make no recommendation on this item.

At the NEWMA 2019 Interim Meeting, the Committee and the body take no position on this item as no comments were heard during open hearings.

At the CWMA 2019 Interim Meeting, Mr. Loren Minnich (Kansas), the submitter of the item, requested the item be assigned a developing status to receive input on the item. Mr. Richard Suiter (Richard Suiter Consulting) suggested further clarification regarding what is a load receiving element vs. weighing element. Mr. Jason Smith (South Dakota) agreed that there is clarification needed. We recommend the item move forward as Developing.

At the 2020 WWMA Annual Meeting, the WWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 SWMA Annual Meeting, the SWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 NEWMA Annual Meeting, the NEWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 CWMA Annual Meeting, the CWMA S&T Committee heard from the developer of this item, who requested this item remain developing to allow more time for input from all parties. The CWMA agreed and recommended this item remain as a Developing item.

During the 2021 NEWMA Annual Meeting, a comment was heard from Mr. John Barton (NIST OWM) outlining the NIST analysis. Mr. Barton believes this item needs more work and is willing to assist the submitter in the development. Mr. Vires is in opposition of this item and believes it may be an application issue and not a specification issue. The NEWMA S&T Committee recommends that this item remain with Developing status.

At the 2021 CWMA Annual Meeting, the CWMA heard from Mr. Minnich, who continues to work with NIST on this item and noted that limited work has been completed since January. Work will continue prior to the NCWM Annual Meeting. If any questions or suggestions, please send to Mr. Minnich. Mr. Vires, speaking on behalf of the SMA, opposed this item as it may be an application issue and not a specification issue. Some members of SMA willing to participate in further development of this item. Mr. Barton believes this item needs additional work and stated that NIST OWM is willing to work with the submitter. The CWMA S&T Committee recommends that this item remain a Developing item.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

SCL-20.10 V S.1.2.2.2. Class I and II Scales Used in Direct Sale and S.1.2.2.3. Deviation of a "d" Resolution.

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert's Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that

meeting.

Source:

New York Department of Agriculture and Markets

Purpose:

Remove the specification prohibiting the value of “d” from differing from the value of “e” for class I and II scales.

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

~~**S.1.2.2.2. Class I and II Scales Used in Direct Sales.** When accuracy Class I and II scales are used in direct sale applications the value of the displayed division “d” shall be equal to the value of the verification scale interval “e.”~~

~~[Nonretroactive as of January 1, 2020; to become retroactive as of January 1, 2023]~~

~~(Added 2017)~~

~~**S.1.2.2.3. Deactivation of a “d” Resolution.** It shall not be possible to deactivate the “d” resolution on a Class I or II scale equipped with a value of “d” that differs from “e” if such action affects the scale’s ability to round digital values to the nearest minimum unit that can be indicated or recorded as required by paragraph G-S.5.2.2. Digital Indication and Representation.~~

~~(Added 2018)~~

S.1.2.2.42. Class III and IIII Scales. The value of “e” is specified by the manufacturer as marked on the device. Except for dynamic monorail scales, “e” must be less than or equal to “d”.

Background/Discussion:

In the opinion of the submitter, beginning January 1, 2020, this specification will require device owners to purchase unnecessary class I or II scales and beginning January 1, 2023, it will require them to remove from use scales that are perfectly acceptable for their purpose. This will result in the removal of a great number of good scales (thousands or more) with a very high replacement value. Scales where “d” differs from “e” can be used accurately provided they are tested with proper weights, using a tolerance based on “e” but using the value of “d” for tolerance application. When this is done the value of “d” can be used in direct sales. I believe there is a misunderstanding regarding NTEP evaluation where it is believed that the value of “d” is not used during the evaluation process. This is not correct, the value of “d” is used, and devices will fail if the value of “d” is outside the applicable tolerance.

The submitter suggested that there was considerable concern that the value of “d” was being used in the direct sales of cannabis and that the rounding would result in inaccurate values. These concerns could be addressed if NTEP/NIST representatives assured those concerned that the value of “d” can be used during testing and that following successful testing the value of “d” can be used in direct sales with confidence.

During Open Hearings session at the 2020 NCWM Interim Meeting, the Committee heard from Mr. Steven Harrington (Oregon) who commented that when considering the three items on the Committee’s agenda related to this same issue (SCL-20.2, SCL-20.10, and SCL-20.11) he would prefer to see S.1.2.2.2. deleted as proposed in this item, SCL-20.10 rather than to make exemptions as recommended in SCL-20.11. He also would support a change to make the current specification requirement S.1.2.2.2. into a user requirement as proposed in B2: SCL-20.2. He recommends SCL-20.10 as a Voting item.

Mr. Vires stated that the SMA supports this as a Voting item as submitted in their written comments to the Committee.

Mr. Barton commented that all three items should be addressed together for one solution and referenced OWM’s written analysis that was submitted to the Committee. He also stated that proposals to add exemptions is usually not a good practice. He recommends this continue as a Developing item.

Mr. Jim Willis (New York) commented that something needs to be done to rectify this section, as it stands now it is a hardship on some industries. He asked that this item move forward as Voting and if not, that he would support SCL-20.11.

Mr. Ken Ramsburg (Maryland) commented that he recommends that this item be Withdrawn and also Withdraw B2: SCL-20.2 and supports SCL-20.11 as Voting.

During their work session, the Committee agreed to assign this item a Voting status.

During the discussion of this item at the 2020 NCWM Annual Meeting Open Hearing session, the S&T Committee presented an amended version of the item which differed from the item included in Publication 16. The amended item presented during the Open Hearing is shown below:

~~**S.1.2.2.2. Class I and II Scales Used in Direct Sales. — When accuracy Class I and II scales are used in direct sale applications the value of the displayed division “d” shall be equal to the value of the verification scale interval “e.”**~~
~~**[Nonretroactive as of January 1, 2020; to become retroactive as of January 1, 2023]**~~
(Added 2017)

S.1.2.2.32...

S.1.2.2.43...

Changes to the Item Under Consideration recommended by the Committee were made to retain S.1.2.2.3. Deactivation of a “d” Resolution. and only remove S.1.2.2.2. Class I and II Scales Used in Direct Sales. if the item had been adopted as amended. This was in response to concerns expressed that simply deactivating the “d” resolution on a scale display where $e \neq d$ would, potentially, cause devices to round improperly. S.1.2.2.3. was adopted in 2018 and added to NIST Handbook 44 Scales Code in 2019 to prevent improper rounding if the differentiated “d” were deactivated in the scale’s display.

The following comments related to both the item as amended and the version included in NCWM Publication 16.

- There were several comments in favor of retaining the original version in NCWM Publication 16.
- The point was made that not all regions considered the amended item and therefore due process was not followed.
- The Committee heard a few comments supporting the item moving forward no matter if the amended version or the item as presented in NCWM Publication 16 was voted on due to the uncertainty surrounding the interpretation of S.1.2.2.2 and the urgency of how this is affecting those industries using precision scales where $e \neq d$.
- There was support for moving forward with the amended item to retain S.1.2.2.3. in NIST Handbook 44 because some Class I and II scales, having different values of “e” and “d”, fail to round properly if the “d” resolution is disabled or turned off.
- If the item were to move forward as amended, it should be downgraded to Informational or Developing status to allow due process.
- A few questions were heard during the Open Hearing session asking if this action is within the scope of the Cannabis or Verification Scale Interval Task Groups. Clarification was provided indicating that this item was not part of the Cannabis or Verification Scale Interval Task Group scope, although both were considering similar items. Additionally, the Committee was asked “should this item be assigned to the Cannabis Task Group?”.

The S&T Committee considered these comments and decided to present the item as included in NCWM Publication 16 as the Item Under Consideration. The rationale was in part because the regions did not consider the item as amended and in part because the combination of G-S.5.1. General and G-S.5.2.2., specifically part (c), address how a scale must operate with regard to rounding. Also, the combination of G-UR.3.1. Method of Operation and S.6. Marking Requirements specify a scale must be properly marked to identify when $e \neq d$ and that the scale must not be used in a way that is contrary to its construction.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items, this item included, were addressed. All other items were addressed in the subsequent 2021 NCWM Interim Meeting.

The item was carried over to the 2021 NCWM Interim Meeting where testimony during the Committee's open hearing session included the following:

- Many commenters stated their support for the original draft as shown in NCWM Publication 16 prior to the Committee's amendments since those changes significantly change the proposal. Those supporting the original draft version included Mr. Harrington, Mr. Willis, Mr. Charlie Stutesman (Kansas), and Mr. Tim Chesser (Arkansas). Mr. Harrington also stated that this item affects more than just scales that are now being used in the commerce of Cannabis.
- Mr. Timar pointed out that that this proposal will create a situation where many scales that have received prior approval in the jewelry industry will need to be replaced.
- Mr. Barton acknowledged that a differentiated "d" digit may cause confusion but pointed out that the existing requirement S.1.2.2.3. should not be eliminated since that requirement was adopted to prevent the disabling of a "d" resolution on a scale when doing so would cause the scale to not round properly and as required in NIST HB 44.

During the Committee's work session, the Committee acknowledged that the amended version of the item was not properly vetted and agreed to present the item for a vote as originally drafted and as was found in NCWM Publication 16. The Committee also noted that NIST HB 44 General Code already contains a requirement for displays to round properly (G-S.5.2.2. subpart c) which detracts from the need of the Scales Code requirement S.1.2.2.3.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, during the Open Hearing session, comments were taken as a group to include items SCL-20.2, SCL-20.10, and SCL-20.11.

Mr. Harrington commented he still believes there is merit in the proposed changes but suggested removing the retroactive date to allow devices now in service to remain in service. Mr. Vires, speaking on behalf of the SMA, provided some history of the use of both "d" and "e" for scales and that field inspectors did not have the appropriate test weight to properly test these scales to the finest resolution. While supported initially by the SMA, it was not realized that this proposal would have unintended consequences related to the jewelry industry where "d" is commonly used in weight determinations. The SMA recommends that the retroactive date be eliminated to allow manufactures additional time to change the designs on their equipment and so existing scales can continue to be used. Mr. Vires also suggested that this requirement could be formatted as a user requirement.

Mr. Barton stated that the exclusion of jeweler's scales in this requirement could provide reason to exclude other applications and this may be a "slippery slope."

Mr. Harrington stated that he could also support the proposal formatted as a user requirement.

The Committee agrees that this proposal should be Withdrawn. The Committee acknowledges paragraph S.1.2.2.2. has merit as it appears currently in NIST HB 44 except for the nonretroactive status, becoming retroactive at a later date. The Committee will address the issue of the nonretroactive and retroactive status in item SCL-20.11.

At the SWMA 2019 Annual Meeting, the Committee recommends this item be Withdrawn. The Committee prefers SCL-20.11.

At the NEWMA 2019 Interim Meeting, the Committee and the body find merit in this item and finds it fully developed and agrees it should be assigned a Voting status. Submitter, Mr. Willis presented a short PowerPoint explaining the unintended consequences of 2.20.S.1.2.2.2 in 2019 NIST HB 44 for certain industries. He also stated that New York will not enforce the current language in NIST HB 44 as it puts undue burden on those that have used NTEP certified scales for decades and now will be forced to buy new devices. Mr. John McGuire (New Jersey) asked what the difference is between SCL-20.10 and SCL-20.11. Mr. Timar says the exception in 20.11 has a carve out just for jewelry scales, but submitter wants language to return to 2017 NIST HB 44. Mr. McGuire supports submitter's position.

At the CWMA 2019 Interim Meeting, Mr. Minnich commented that the item should move forward as a voting item with the above amendment. We recommend the item move forward as a Voting item with the above amendment.

At the 2020 WWMA Annual Meeting, the WWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 SWMA Annual Meeting, the SWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 NEWMA Interim Meeting, the NEWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 CWMA Interim Meeting, the CWMA S&T Committee heard from the developer of this item, who requested this item remain developing to allow more time for input from all parties. The CWMA agreed and recommends a Developing status for this item.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

SCL-20.11 W S.1.2.2.2. Class I and II Scales Used in Direct Sales.

Source:

Mettler Toledo, LLC

Purpose:

Clarify that this specification is not applicable to jewelers' scales and that it does apply to the other markets for which it was intended when modified in 2019, primarily for direct sales of cannabis.

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

S.1.2.2.2. Class I and II Scales Used in Direct Sales. – Except for jewelers' scales, ~~When accuracy Class I and II scales are used in direct sale applications,~~ the value of the displayed division "d" shall be equal to the value of the verification scale interval "e".
[Nonretroactive as of January 1, 2020; ~~to become retroactive as of January 1, 2023~~]

Background/Discussion:

Specification S.1.2.2.2. Class I and II Scales used in Direct Sales was added in 2017 and is going into effect for new scales going on the market in January 2020 with a retroactive date of January 2023. S.1.2.2.2. came about due to the concern that cannabis scale users may not be properly trained, and a direct sale transaction must be based on the "e" verification scale division and not the differentiated displayed scale division "d". The unintended consequence is that users in the jewelry business who are knowledgeable regarding the use and application of these higher precision devices see no benefit to this requirement and are concerned they would need to replace many of their scales by 2023 with more expensive models, which would be an unnecessary burden on them. States have currently established rules and regulations regarding the jewelry business and the proposed change will enable the jewelers' scale owner and the regulators to continue to operate as they have in the past.

An unintended consequence is there are other applications, such as jewelers' scales, where Class I and II scales equipped with auxiliary reading means ("e" ≠ "d") are used by experienced operators, and it is not clear whether the use of these scales will be permitted in direct sales or not. Discussions with several states show there may be confusion in how this new specification is interpreted as it relates to these jeweler's scales.

There is also a concern that the retroactive date of January 2023 will be a burden for those in the jewelry business if they must replace perfectly good scales currently in use.

The addition of S.1.2.2.2. in 2017 has created confusion in the jewelry market whether this change applies to jewelers' scales or not, and which jewelry sales are considered direct sales, and which are not. Jewelers' scale owners have been using these scales for years and have worked closely with local regulators on the proper use of these scales. The proposed change will clarify that this specification is not applicable to jewelers' scales and that it does apply to the other markets it was intended for.

The retroactive date of January 2023 should be eliminated so that existing scales can continue to be used, and not place an undue financial burden on scale owners to replace them.

At the 2020 NCWM Interim Meeting Open Hearing session, Mr. Russ Vires (Mettler Toledo) pointed out that there are existing exemptions for other NIST HB 44 requirements based on the type of application(s) of a scale and that this proposal follows that same principle. Mr. Vires commented that the addition of S.1.2.2.2. in 2017 to the NIST HB 44 Scales Code was prompted by an increase of cannabis sales and pointed out there are some exemptions in other NIST HB 44 sections that are based on the application of types of scales. Mr. Vires also recommended that in addition to "jewelers scales," "grain-test scales" should also be given an exemption from S.1.2.2.2. He also recommends removing the retroactive date and extending the nonretroactive date from 2020 to 2023.

Mr. Vires, speaking on behalf of the SMA, stated that the SMA supports SCL-20.11 as a Voting item and has submitted written comments to the Committee. However, if this item is Withdrawn the SMA would support SCL-20.10. Mr. Steve Harrington (Oregon) stated that this is not just a cannabis issue and that concerns expressed regarding the determination of the application of requirements based upon "e" or "d" will not be resolved at this time. Mr. Harrington recommends this item should be withdrawn. Mr. Harrington also noted his support for the preceding item on the S&T agenda; SCL-20.10. Mr. Jim Willis (New York) and Mr. Kevin Schnepf (California) agreed with Mr. Harrington.

During their work session, the Committee agreed to Withdraw this Item.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, Mr. Harrington commenting that he still believes there is merit in the proposed changes but suggested removing the retroactive date to allow devices now in service to remain in service. Mr. Russ Vires (SMA) provided some history of the use of both "d" and "e" for scales and that field inspectors did not have the appropriate test weight to properly test these scales to the finest resolution. While supported initially by the SMA, it was not realized that this proposal would have unintended consequences related to the jewelry industry where "d" is

commonly used in weight determinations. The SMA recommends that the retroactive date be eliminated to allow manufactures additional time to change the designs on their equipment and so existing scales can continue to be used. Mr. Vires also suggested that this requirement could be formatted as a user requirement.

Mr. John Barton (NIST OWM) stated that the exclusion of jeweler's scales in this requirement could provide reason to exclude other applications and this may be a "slippery slope."

Mr. Harrington stated that he could also support the proposal formatted as a user requirement.

The Committee recommends this item be given a voting status as amended in the proposal including the exception for jeweler's scales. The Committee recommends to further add an exception for grain test scales used in USDA applications as shown.

S.1.2.2.2. Class I and II Scales Used in Direct Sales. – Except for jewelers' scales and grain test scales used in USDA applications. ~~When~~ accuracy Class I and II scales are used in direct sale applications, the value of the displayed division "d" shall be equal to the value of the verification scale interval "e".
[Nonretroactive as of January 1, 2020; ~~to become retroactive as of January 1, 2023~~]

At the SWMA 2019 Annual Meeting, Mr. Russ Vires (Mettler Toledo, submitter) suggested the following change.

S.1.2.2.2. Class I and II Scales Used in Direct Sales. – Except for jewelers' scales and grain test scales used in USDA applications. ~~When~~ accuracy Class I and II scales are used in direct sale applications, the value of the displayed division "d" shall be equal to the value of the verification scale interval "e".
[Nonretroactive as of January 1, 2020; ~~to become retroactive as of January 1, 2023~~]

The Committee recommends moving this item forward as a Voting Item with the proposed changes.

At the NEWMA 2019 Interim Meeting, the Committee and the body agree that this item is redundant and would cause a special carve out for devices used in certain industries. The Committee believes this item should be withdrawn and urges the submitter to work with the submitter of SCL-20.10. Mr. Ethan Bogren (Westchester County, New York), Mr. John McGuire (New Jersey), Mr. Willis, and Mr. Marc Paquette (Vermont) all voiced concerns about the redundancy of the item. Mr. Richard Suiter (Suiter Consulting) commented that the Southern Weights and Measures Association recommended also including grain test scales in this proposal.

At the CWMA 2019 Interim Meeting, Mr. Loren Minnich (Kansas) commented that it is inappropriate to make this exemption, and this item should be withdrawn. We recommend the item be withdrawn.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

SCL-20.12 V Sections Throughout the Code to Include Provisions for Commercial Single Draft Weigh-in-Motion Vehicle Scales.

(This item was adopted.)

Source:

Mettler-Toledo, LLC

Purpose:

Recognize commercial single draft Weigh-in-Motion vehicle scale systems.

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

S.1. Design of Indicating and Recording Elements and of Recorded Representations.

...

S.1.14. Weigh-in-Motion (WIM) Vehicle Scales

S.1.14.1. Identification of a Fault. – Fault conditions shall be presented to the customer and the operator in a clear and unambiguous manner. No weight value shall be indicated or recorded when a fault condition is detected. The following fault conditions shall be identified if applicable:

- (a) **Vehicle speed was below the minimum or above the maximum speed as specified by the manufacturer.**
- (b) **A change in vehicle speed greater than that specified by the manufacturer was detected.**
- (c) **Vehicle direction of travel was not valid for the installation.**
- (d) **The amount of time all vehicle axles were simultaneously on the scale was below the minimum Data Acquisition Time.**
- (e) **Vehicle's path of travel was outside the lateral side edges of the load-receiving element.**

S.1.14.2 Information to be Recorded. – In addition to the information that is normally recorded for vehicle scales, the following shall also be printed and/or stored electronically for each vehicle weighment if applicable:

- (a) **Scale identification if more than one lane at the site has the ability to weigh a vehicle in motion.**
- (b) **Vehicle direction of travel if the Weigh-in-Motion Vehicle Scale is bi-directional.**

(Added 20XX)

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S.3. Design of Load-Receiving Element

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S.3.4. Length of Weigh-In-Motion Vehicle Scales – The load-receiving element shall be of sufficient length to allow the weighment of any vehicle intended to be weighed on the scale in a single draft (i.e. all axles of the vehicle are on the load-receiving element simultaneously during the weighment).

(Added 20XX)

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S.6. Marking Requirements

Table S.6.3.a. Marking Requirements					
To Be Marked With ↓	Weighing Equipment				
	Weighing, Load-	Indicating Element not	Weighing and Load-	Load Cell with CC	Other Equip

Table S.6.3.a. Marking Requirements					
	Receiving, and Indicating Element in Same Housing or Covered on the Same CC ¹	Permanently Attached to Weighing and Load- Receiving Element or Covered by a Separate CC	Receiving Element Not Permanently Attached to Indicating Element or Covered by a Separate CC	(11)	ment or Device (10)
Manufacturer's ID (1)	X	X	X	X	X
Model Designation and Prefix (1)	X	X	X	X	X
Serial Number and Prefix (2)	X	X	X	X	X (16)
Certificate of Conformance Number (CC) (23)	X	X	X	X	X (23)
Accuracy Class (17)	X	X (8)	X (19)	X	
Nominal Capacity (3)(18)(20)	X	X	X		
Value of Scale Division, "d" (3)	X	X			
Value of "e" (4)	X	X			
Temperature Limits (5)	X	X	X	X	
Concentrated Load Capacity (CLC) (12)(20)(22)		X	X (9)		
Special Application (13)	X	X	X		
Maximum Number of Scale Divisions (n_{\max}) (6)		X (8)	X (19)	X	
Minimum Verification Scale Division (e_{\min})			X (19)		
"S" or "M" (7)				X	
Direction of Loading (15)				X	
Minimum Dead Load				X	
Maximum Capacity				X	
<u>Minimum and Maximum Speed</u> (25)			<u>X</u>		
<u>Maximum Speed Change</u> (26)			<u>X</u>		
<u>Vehicle Direction Restriction</u> (27)			<u>X</u>		
Safe Load Limit				X	
Load Cell Verification Interval (v_{\min}) (21)				X	
Section Capacity and Prefix (14)(20)(22)(24)		X	X		

**Table S.6.3.a.
Marking Requirements**

(Added 1990) (Amended 1992, 1999, 2000, 2001, 2002, 2004 and 20XX)

**Table S.6.3.b.
Notes for Table S.6.3.a. Marking Requirements**

25. Weigh-in-Motion Vehicle Scales must be marked with minimum and maximum vehicle speed limitations.

(Added 20XX)

26. Weigh-in-Motion Vehicle Scales must be marked with maximum vehicle speed change allowed during the weighment.

(Added 20XX)

27. Weigh-in-Motion Vehicle Scales must be marked as uni-directional if the travel direction is restricted.

(Added 20XX)

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N.1. Test Procedures.

...

N.7. Weigh-in-Motion Vehicle Scale.

N.7.1. Reference Scale – A static scale as approved by the local jurisdiction shall be used to establish the weight of Reference Vehicles used in this procedure.

N.7.1.1. Dimension - The Reference Scale shall be of such dimension and spacing as to weigh Reference Vehicles in a single draft.

N.7.1.2. Location - The Reference Scale should be located near the Weigh-in-Motion Vehicle Scale to minimize the effect of vehicle fuel consumption. The Reference Scale and the Weigh-in-Motion Vehicle Scale may be the same scale.

N.7.1.3. Timing - The Reference Scale shall be tested immediately prior to using it to establish Reference Vehicle weights. A subsequent test of the Reference Scale may be performed immediately following the establishment of the Reference Vehicle weights to ensure its repeatability.

N.7.1.4. Qualification - The Reference Scale shall comply with the principles in the Fundamental Considerations paragraph 3.2. Tolerances for Standards.

N.7.2. Reference Vehicle – One or more Reference Vehicles shall be used to provide varying weight conditions for testing. Reference Vehicles should be representative of vehicles that are customarily weighed on the Weigh-in-Motion Vehicle Scale during normal operation. A motorized Field Standard Weight Cart with test weights and a driver may be used as an additional Reference Vehicle.

N.7.2.1. Weight Conditions - Reference Vehicle(s) shall be selected to provide at least a high and low weight condition. Different vehicle types may be used.

N.7.2.2. Load Position - Loads on the Reference Vehicle should be positioned equally side-to-side.

N.7.2.3. Static Weight - Reference Vehicle(s) shall be statically weighed on a Reference Scale as defined in N.7.1. immediately before being used to conduct the Weigh-in-Motion Vehicle Scale tests.

N.7.2.3.1. Rounding - Error weights may be added to the Reference Vehicle to increase its weight to a whole scale division to minimize rounding errors.

N.7.2.3.2. Re-weighing - Reference Vehicles may be re-weighed at the discretion of the testing authority.

N.7.3. Test speeds – The speed of the Reference Vehicle shall be maintained within the parameters as specified by the manufacturer during each test (see also S.1.14.1.a and S.1.14.1.b).

N.7.3.1 Range - Various speeds of the Reference Vehicle shall be used between the minimum and maximum operating speed specified for the Weigh-in-Motion Vehicle Scale. The minimum speed capability of the Reference Vehicle may be used as the minimum speed.

N.7.4. Static Tests for Weigh-in-Motion Vehicle Scale – The Weigh-in-Motion Vehicle Scale shall comply with applicable vehicle scale tests defined in N.1. when tested statically.

N.7.5 Dynamic Tests for Weigh-in-Motion Vehicle Scale – Test procedures shall simulate the normal intended use as closely as possible (i.e. test as used).

N.7.5.1. Vehicles - The tests shall be performed using the Reference Vehicle(s) defined in N.7.2.

N.7.5.2. Weighments - Each Reference Vehicle shall have a minimum of 5 weighments at the speeds as defined in N.7.3.

N.7.5.3. Vehicle Position - Reference Vehicle(s) must stay within the defined roadway along the load receiving element (see also S.1.14.1e).

N.7.5.4. Travel Directions - The tests shall be performed in both directions of travel unless travel direction is restricted by the marking.

N.7.5.5. Results - At the conclusion of the weigh-in-motion tests, there shall be a minimum of 10 total weight readings for the Reference Vehicle(s) for each applicable direction of travel. The tolerance for each weight reading shall be based on the gross vehicle weight and the applicable tolerance values for Class III L.

(Added 20XX)

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Table 7a. Typical Class or Type of Device for Weighing Applications	
Class	Weighing Application or Scale Type
I	Precision laboratory weighing
II	Laboratory weighing, precious metals and gem weighing, grain test scales

Table 7a. Typical Class or Type of Device for Weighing Applications	
Class	Weighing Application or Scale Type
III	All commercial weighing not otherwise specified, grain test scales, retail precious metals and semi-precious gem weighing, grain-hopper scales, animal scales, postal scales, vehicle on-board weighing systems with a capacity less than or equal to 30 000 lb, and scales used to determine laundry charges
III L	Vehicle scales (including weigh-in-motion vehicle scales), vehicle on-board weighing systems with a capacity greater than 30 000 lb, axle-load scales, livestock scales, railway track scales, crane scales, and hopper (other than grain hopper) scales
IIII	Wheel-load weighers and portable axle-load weighers used for highway weight enforcement
Note: A scale with a higher accuracy class than that specified as “typical” may be used.	

(Amended 1985, 1986, 1987, 1988, 1992, 1995, ~~and 2012~~, and 20XX)

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UR.3. User Requirements.

...

UR.3.13. Fault Indications for Weigh-In-Motion Vehicle Scales. – The fault conditions defined in S.1.14.1, shall be presented to the customer and the operator in a clear and unambiguous manner. (Added 20XX)

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Appendix D. Definitions

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data acquisition time (DAT). – The total time an object is completely on a load-receiving element while it is being weighed in motion. An object is completely on a load-receiving element from the time the trailing edge of an object to be weighed first moves onto the load-receiving element up to the time the leading edge of the object first moves off the load-receiving element. This time duration is affected by the length of the load-receiving element, speed of the object to be weighed, and the length of the object to be weighed. [2.20] (Added 20XX)

...

reference vehicle. – A vehicle with an associated load, including the driver, that has been statically weighed for temporary use as a field standard, typically the time required to test one Weigh-in-Motion Vehicle Scale. [2.20] (Added 20XX)

...

vehicle scale. – A scale **(including weigh-in-motion vehicle scales)** adapted to weighing highway, farm, or other large industrial vehicles (except railroad freight cars), loaded or unloaded. [2.20]

(Amended 20XX)

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weigh-in-motion (WIM) vehicle scale. – A vehicle scale adapted to weighing vehicles as they travel across the scale without stopping. [2.20]

(Added 20XX)

Background/Discussion:

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Mr. Eric Wechselberger
Mettler-Toledo, LLC
(614) 202-7254, eric.wechselberger@mt.com

There has been a lot of work done to include Commercial Weigh-in-Motion into NIST Handbook 44 over the past few years. Mettler-Toledo has been a supporter of adding WIM code into NIST HB44, however, the axle weighing scale proposed has failed to demonstrate that it can meet the requirements and tolerances associated with commercial vehicle weighing.

There is a growing need in the market to provide commercial vehicle weighing transactions faster than can currently be done by static weighing. We also know weigh-in-motion vehicle scales can provide these faster transactions and meet the requirements to provide commercially accurate results dynamically when the complete vehicle is on the scale. For these reasons, Mettler-Toledo is submitting this proposal to amend NIST Handbook 44 to include single draft WIM vehicle scales.

Those in favor of axle weighing scales may be opposed to WIM scales being included in UR.3.3. Single-Draft Vehicle Weighing. However, until those devices can demonstrate they can meet the NIST Handbook 44 Class IIIL requirements and provide adequate test procedures to verify the device can perform under all conditions of anticipated use, they should not be permitted to be used as commercial devices. Mettler-Toledo can demonstrate a single draft WIM vehicle scale can meet the NIST HB 44 requirements and we will work with the conference to refine the test procedures as needed in our proposal.

During the open hearing session of the 2020 NCWM Interim Meeting, the Committee was given a presentation on this proposal by the submitter, Mettler-Toledo, LLC. The presentation consisted of a video showing testing done on the submitter's WIM system using three different configurations of highway freight trucks. Comments from Mr. Tim Chesser (Arkansas), Mr. Doug Musick (Kansas) and Mr. Steve Harrington (Oregon) pointed out this system should include alerts to the operator that any parameters to be followed during weighments on this system were not followed. These parameters could include vehicle speed, slowing and/or acceleration of the vehicle while being weighed, proper tracking of the vehicle's wheels on the load-receiving element, etc. The comments included that if the parameters were exceeded by a significant amount, there should be no weight value indicated or recorded by the system.

Several Committee members asked the submitter to explain the terms "single-draft" and "multi-draft" weighing and how this system will determine when the entire weight of the vehicle is captured. Mr. Eric Wechselberger (Mettler-Toledo) explained that in general, multi-draft weighing is done by weighing independently the axles or groups of axles of the vehicle and mathematically summing those values. Single-draft weighing is performed when the entire vehicle is positioned on the load-receiving element. Mr. Wechselberger further explained their system will sense when the entire vehicle is positioned on the load-receiving element when the increase of weight value ceases and prior to the instant when the weight registered begins to decrease as the vehicle exits the load-receiving element.

The submitter also explained that these systems are subject to requirements addressing the approaches to the weighing element as found in NIST HB 44 Scales Code UR.2.6., as well as adhering to the requirement addressing "single-draft

weighing” in UR.3.3. Additionally, explanation was given regarding how Mettler Toledo’s WIM system determines the speed of the vehicle as it travels across the load-receiving element.

Mr. Chesser as co-chair of the NCWM WIM TG, noted that the task group is struggling to come to consensus on appropriate test procedures for the WIM system addressed under SCL-16.1 and indicated that this proposal may benefit from the work the TG has done to this point. Mr. Chesser noted that the Committee may elect to add the further development of this item to the already formed TG. Mr. Eric Golden (Cardinal Scale) noted that it may be relatively easy to achieve acceptable results when using a particular type/configuration of vehicle as the test load, but it would be a bigger challenge to get the same results when using a variety of different vehicle configurations. As the submitter, Mettler Toledo invited interested parties from NCWM to witness a series of demonstration tests to be conducted at their facility on March 10, 2020. Mr. Golden also raised the question if multi-platform vehicle scales are considered to provide a weighment that is multi-draft and can these types of vehicle scales be used as WIM scales.

Mr. Brad Fryburger (Rinstrum) as submitter of SCL-16.1 asked the Committee what results are necessary in terms of accuracy to provide evidence that these types of WIM systems are viable and would provide justification for a proposal such as this to move forward. Mr. Fryburger further explained that Rinstrum’s system (which uses multi-drafts of axles or axle groups to calculate a total gross weight of the vehicle) has yet to demonstrate a 100 % compliance with the NIST HB 44 Scales Code Class III L tolerances. Mr. Fryburger was of the understanding that a WIM system used for weighing highway vehicles was required to prove its capability of providing accurate weighments 100 % of the time.

NIST OWM commented that it was not their belief that these systems be within Class III L tolerances for each and every weighment to demonstrate the proposed changes have merit and to justify that work continue by the TG assigned to SCL-16.1. If and when these systems are type approved and placed in service, field testing will confirm they are suitable for use and the marketplace will determine their viability for commerce. Additionally, NIST OWM noted the proposal recommends the addition of requirement S.1.8.6. (addressing values to be recorded) and that the proposed location in the Scales Code may be inappropriate. NIST OWM points out that this requirement is not directed towards computing scales and would be located more appropriately elsewhere in the NIST HB 44 Scales Code.

Mr. Constantine Cotsoradis (Flint Hills Resources) and Mr. Wechselberger recommended the Committee assign a Voting status to this item.

During the Committee’s work session, it was decided the item does have merit, and that it should be given a Developing status. The Committee will provide the submitter specific detail on what additional information is needed to move the item forward with a recommendation that the submitter carefully review NIST OWM’s analysis of the proposal and comments heard during the Open Hearing session.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items, this one included, were addressed in the subsequent 2021 NCWM Interim Meeting.

During the 2021 NCWM Interim Meeting Open Hearings, Mr. Wechselberger gave a presentation that provided indication of the performance of the system during testing.

Mr. Loren Minnich (Kansas), Mr. Alan Walker (Florida), Mr. Golden, and Mr. Kevin Schnepf (California) voiced support for the item. Mr. Russ Vires (Mettler Toledo) speaking on behalf of the SMA, as well as Mr. Jan Konijnenburg (Rice Lake Weighing Systems) and Mr. Ken Ramsburg (Maryland) supported a voting status for the item.

Mr. John Barton (NIST OWM) noted that this item appears fully developed. NIST OWM, however, recommends test procedures for any reference scale to be used during an official examination be included in the proposal. NIST OWM has been concerned that a number of dynamic weighing systems are lacking this important detail and would like to establish a practice where these test procedures are documented in detail. Mr. Charlie Stutesman (Kansas) commented this item should not be held back in order to establish test procedures for a reference scale.

During the Committee's work session, it concluded that the item is fully developed and should be presented for a Vote.

During the 2021 NCWM Annual Meeting, Mr. Wechselberger provided an update during Committee Open Hearings on the work that had been done to collect data on Mettler Toledo's WIM system and demonstrate its performance capabilities to Conference participants, including participants from NIST, officials from several states, and NCWM (NTEP). Mr. Wechselberger noted that Mettler Toledo had taken the step to consult with NIST, as OWM staff had requested, concerning adequate test procedures. Mr. Wechselberger also expressed his willingness to continue those discussions in an effort to develop proper test procedures. Mr. Golden stated that he believed the proposal was fully developed and supported it as a voting item, yet he too, noted the need to develop adequate test procedures. Mr. Golden agreed to work within NCWM's Weighing Sector to help develop adequate test procedures for type evaluation.

Several representatives from industry and state regulatory officials voiced support in favor of adoption of the item. One state official suggested exercising caution when considering the proposal because he hadn't been involved in witnessing any of the testing, nor had he yet seen Mettler Toledo's WIM system. In consideration of the comments received in support of the proposal, the Committee agreed to present the item for Vote.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, Mr. Vires commented, as the submitter of the item, that input is requested from the regional associations, regulators, and other sources on the changes being proposed. Mr. Vires stated that he believes the item is fully developed and requested that it be assigned as a Voting item. Mr. Barton stated that NIST OWM has not had enough opportunity to review this item fully but that it is encouraging to note that the submitter is offering others the opportunity to observe the submitter's device being tested to provide evidence that it will meet Class IIIL tolerances. Mr. Golden stated that as a member he has experienced the frustration in the past 18 months with the existing WIM TG addressing item SCL-16.1. Mr. Golden stated that Cardinal could support this proposal as a Developing item with some reservations.

The Committee agrees the item has merit and also that the item be given a Developing status. The Committee notes that the submitter has stated there is an opportunity for having members of the NCWM, NIST, and/or regulatory officials to witness the operation of the systems referenced in this proposal thus providing evidence the systems will meet current Class IIIL tolerances.

At the SWMA 2019 Annual Meeting, Mr. Chesser recommended this item be given an Assigned status. Mr. Vires stated that he did not support an Assigned status and is willing to demonstrate the capabilities of the device by the 2020 NCWM Interim Meeting. Mr. Vires believes the item is well developed but would rather the item be recommended as Developing back to Mettler-Toledo, the submitter. Mr. Golden asked how multi-platform scales would be considered moving forward, and that he supports single draft weighing. Mr. Richard Suiter (WIM Task Group) stated that this item conflicts with the task group's proposal if single draft weighing became the only allowable method. He also stated that the task group wants to remove the single draft requirement for WIM Vehicle Scales.

The Committee recommends this item be Assigned to the WIM TG.

At the NEWMA 2019 Interim Meeting, the Committee and the body agree that this item has merit and should be given an Assigned status. During Open Hearings, Mr. Suiter (Richard Suiter Consulting) commented that as a WIM member, recommend the item be assigned. Mr. Suiter explained that this proposal is different than SCL-16.1 because it proposes using a single draft with a full-length truck scale. Mr. John McGuire (New Jersey) and Mr. Jim Willis (New York) agree with this position.

At the CWMA 2019 Interim Meeting, Mr. Golden commented that they support the single draft requirement for WIM vehicle scales, and this item should be separate from SCL-19.2. Mr. Suiter commented that other regions recommended assigning the item and that the WIM TG can develop both items. Mr. Stutesman commented that SCL-19.2. has been held back by disagreement over test procedures and this item shouldn't be assigned to the WIM

TG. Mr. Jason Smith (South Dakota) commented that the WIM TG was developing code for all devices and could consider both. We recommend the item be assigned to the WIM TG, so that group can determine how these items move forward.

At the 2020 WWMA Annual Meeting, the WWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 SWMA Annual Meeting, the SWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 NEWMA Interim Meeting, the NEWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

During the 2020 CWMA Interim Meeting, Mr. Vires gave a presentation to the CWMA S&T Committee on this item. The presenter answered a number of questions from the Committee and from both regulatory officials and industry representatives on this item. A concern that was highlighted questioned if placing the reference scale into high resolution, the reference scale may not comply with the N max requirement. Another concern of regulatory officials was the need to test the reference scale to used capacity with known field standards. This could require an additional burden to both the regulatory officials and the device owners. Mr. Vires commented that this item was still being developed with the goal of presenting a final version at the NCWM meeting in January. Not having seen a final version of the item, the Committee recommends this item remain a Developing item.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

SCL-20.13 V N.1.5. Discrimination Test.

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert's Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

Source:
NTEP Weighing Sector

Purpose:
Provide and exception to the discrimination test requirements for scales in which the value of $e = d$ and is less than 5 mg e since this is not a practical test for field inspection.

Item Under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

N.1.5. Discrimination Test. – Except for digital electronic scales designated Accuracy Class I or II in which the value of $e = d$ and is less than 5 mg. A discrimination test shall be conducted on all automatic indicating scales with the weighing device in equilibrium at or near zero load and at or near maximum test load, and under controlled conditions in which environmental factors are reduced to the extent that they will not affect the results obtained. For scales equipped with an Automatic Zero-Tracking Mechanism (AZT), the discrimination test may be conducted at a range outside of the AZT range.

[Nonretroactive as of January 1, 1986]

(Added 1985) (Amended 2004 **and 2021**)

Background/Discussion:

The long-accepted procedures for testing discrimination on digital electronic scales in which $e = d$, specify the use of a test load equaling $1.4 e$ to change the displayed indication by $2 e$ when applied or removed from the weighing/load-receiving element at a starting reference that is just outside the zone-of-uncertainty between 2 consecutive increments. When $e = 1 \text{ mg}$ or 2 mg on a Class I or II scale, a $1.4 e$ test load requires the use of decimal milligram test weights to develop the test loads necessary to test discrimination. Field officials are not likely to possess field standards this small; nor do some of the NTEP labs possess them.

At the 2019 NTEP Lab Meeting, the weighing evaluators present at the meeting reported they believe it very questionable that a field test of discrimination using such small test loads could be performed and there be confidence in the outcome of the results of those tests. Additionally, the evaluators were not aware of any weights and measures jurisdiction that has issued decimal milligram field standard test weights to field staff. Some of the NTEP weighing evaluators reported they too do not possess test standards this small. Consequently, the NTEP evaluators agreed during the 2019 NTEP Lab Meeting to draft a 2019 Weighing Sector proposal to amend NCWM Publication 14 DES to eliminate the application of the discrimination test on scales in which the value of $e = d$ and is less than 5 mg. The NTEP evaluators also concluded during the 2019 NTEP Lab Meeting, NIST HB 44 Scales Code paragraph N.1.5. would also need to be amended because it specifies a discrimination test be performed on all automatic indicating scales.

During the 2019 NTEP Weighing Sector Meeting, the Sector agreed to recommend (in Item 5 of its 2019 agenda) adding text to NCWM Publication 14 DES making clear the discrimination test for type evaluation is only intended to apply to scales in which the value of $e = d$ and is greater than or equal to (\geq) 5 mg. The following changes were agreed to and recommended by the Sector:

Amend the title of Sub-Section 44.2 (NCWM Publication 14 DES) as follows:

44.2. Discrimination Test (**Scales in which the value of $e = d$ and is $\geq 5 \text{ mg}$.**) The following tests shall be performed within $10 e$ of zero and at the maximum test load.
44.2.1. ...

Because NTEP evaluates weighing and measuring equipment to verify conformance with NIST Handbook 44 requirements, members of the Sector concluded Scales Code paragraph N.1.5. will first need to be amended as proposed in part 16. of this form to be able to make the changes recommended to Sub-Section 44.2. of NCWM Publication 14 DES.

A similar exception is provided in OIML R 76 where it is specified in clause 3.8.2.2. Digital Indication, the discrimination procedures apply only to instruments with $d \geq 5 \text{ mg}$. Consequently, amending Scales Code paragraph S.1.5. as proposed would improve harmonization of NIST HB 44 and OIML R-76 requirements.

Participants of the 2019 NTEP Lab Meeting and 2019 Weighing Sector Meeting were not aware of any opposition to the proposed changes; both groups reporting at those meetings a belief that discrimination testing is not currently being performed on the scales for which the proposal is directed.

During the 2020 NCWM Interim Meeting Open Hearing session, the Committee heard from Mr. Darrell Flocken (NTEP Administrator) who clarified that this proposal was submitted by the NTEP Weighing Sector and not directly from NTEP. Mr. Russ Vires stated that the SMA supports the item with the following amendments:

N.1.5. Discrimination Test. – ~~Except for digital electronic scales designated Accuracy Class I or II in which the value of $e = d$ and is less than 5 mg, A~~ discrimination test shall be conducted on all automatic indicating scales with the weighing device in equilibrium at or near zero load and at or near maximum test load, and under controlled conditions in which environmental factors are reduced to the extent that they will not affect the results obtained. For scales equipped with an Automatic Zero-Tracking Mechanism (AZT), the discrimination test may be conducted at a range outside of the AZT range.

[Nonretroactive as of January 1, 1986]

(Added 1985) (Amended 2004)

There were additional comments expressing concern whether this issue is more appropriate to appear as a requirement in NIST HB 44 Scales Code or rather a determination to be made at the discretion of the enforcing jurisdiction.

During the Committee's work session, the members determined that the item was fully developed by the submitter and should move to a vote. The Committee assigned a Voting status to the proposal.

During the discussion of this item at the 2020 NCWM Annual Meeting Open Hearing session, the S&T Committee heard a comment of concern from Mr. Charlie Stutesman (Kansas) that if there is an exemption provided in the handbook for a certain category of scales, NTEP would no longer be required to, and would subsequently not, perform the discrimination test and that this could become a precedent for other devices in future examinations. Mr. Flocken responded that while performing this test, it was apparent that environmental factors make it an impractical field test but that NTEP had no intention of changing their practices on discrimination tests.

Comments in support of this item were heard from the SMA, NIST OWM, and multiple State regulators. During the Committee's work session, the Committee agreed to place this item as shown in Item Under Consideration on the voting consent calendar. This item was voted on and adopted during the 2020 NCWM Annual Meeting held in January 2021.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, the item was not addressed by this region.

At the SWMA 2019 Annual Meeting, the item was not addressed by this region.

At the NEWMA 2019 Annual Meeting, the item was not addressed by this region.

At the CWMA 2019 Annual Meeting, several regulators opposed creating an exemption for these scales and supported withdrawing the item. We recommend the item be Withdrawn.

At the 2020 WWMA Annual Meeting, the WWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 SWMA Annual Meeting, the SWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 NEWMA Interim Meeting, the NEWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 CWMA Interim Meeting, the CWMA S&T Committee heard comments in support of this item moving forward as a voting item from the SMA and NIST OWM. Mr. Stutesman made comments of concern with this item opening the door to future exceptions from the discrimination test. The CWMA recommends this item moving forward as a Developing item..

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

SCL-21.1 W S.1.1. Zero Indication

Source:

Town of Wellesley, Massachusetts

Purpose:

With the implementation of screen savers, power savers and text on the displays of automatic-indicating scale or balance indicators the consumer and merchant cannot always see the automatic numerical zero prior to the beginning of a transaction. This proposal is correct that situation.

Item Under Consideration:

Amend NIST Handbook 44, Scale Code as follows:

S.1. Design of Indicating and Recording Elements and of Recorded Representations.

S.1.1. Zero Indication.

- (a) On a scale equipped with indicating or recording elements, provision shall be made to either indicate or record a zero-balance condition.
- (b) On an automatic-indicating scale or balance indicator, provision shall be made to indicate or record an out-of-balance condition on both sides of zero.
- (c) A zero-balance condition ~~may shall~~ be indicated by ~~other than~~ a continuous digital zero indication on both sides of an automatic-indicating scale or balance indicator, provided that an effective automatic means is provided to inhibit a weighing operation or to return to a continuous digital indication when the scale is in an out-of-balance condition.

(Added 1987) (Amended 1993)

- (d) When a screen saver, power saver, or text is displayed prior to the beginning of a weighing operation both the operator and customer indicators shall display the numerical zero[s] condition when performing an actual weighing operation.

Retroactive January 1, 2023

Amended 2021

(Amended 1987)

Previous Action:

N/A

Original Justification:

Language was added to S.1.1 subpart c in 1987 and 1993. The language does not appear to allow for a non-digital sign, zero, to appear on the scale and does not appear to explicitly allow for something other than the zero to appear on the digital scale display, screen saver or power saver notwithstanding. If it does so allow a screen saver or power saver to eliminate a digital zero then the language appears to be in conflict with the General Code G-S.5 Indicating and Recording Elements.

Discussion language in the 1987 S&T Annual Report elaborated this issue but only as it relates to the scale user side with the condition[s] where a zero must appear. It does not discuss the consumer side of the digital scale and the right of the consumer to know the scale is at zero at the beginning of the transaction.

Without the zero being present on the display the consumer and merchant does not know if the scale is out of balance and not working properly.

S&T Item 7 Automated Checkout Stands of the 1973 S&T Committee's Final Report included the following:

“The philosophy expressed in this requirement is that the indications of weighing and measuring devices are readily and easily understood by all those affected. The key words in this paragraph are “clear, definite, and easily read.” Consequently, the equipment must be so designed that the indications and printed representations must meet these criteria for the owner or operator of the equipment and the customer. The decision regarding the amount of time necessary for weight values to be displayed to the customer is based on this requirement. That is, the values displayed must be clear, definite, and easily read. They must be displayed long enough for the information to be fully comprehended by the customer. Paragraph G-S.5.1. requires primary indications and recorded representations to be clear, definite, accurate, and easily read under any conditions of normal operation of the device.”

A condition of normal operation of some scales is when they automatically enter into a screen-saver mode. Yet, when a scale goes into a screen-saver mode, it causes the elimination of the scale's primary indications. If by going into a screen-saver mode the weight display is eliminated (even temporarily), primary indications can no longer be read. This condition conflicts with what is required by paragraph G-S.5.1., which specifies primary indications shall be easily read under any condition of normal operation of a device.



Screen-Saver Mode: No Primary Indications



Primary Indications

Without the zero being present on the display at the start of the transaction, the potential for the facilitation of fraud is increased. The scale could be starting at higher or less than zero when the item is placed on it resulting in an overcharge or undercharge whether accidental or intentional. NIST HB 44 language is intended to protect both the buyer and seller of commodities.

It would also be helpful to know the useful life of the consumer display, both with and without the use of a screen saver. Changes to the physical scales would not be required as they already have this capability. Thus, any changes would be to the software. With improvements to hardware and software capabilities and technologies having greatly improved since this section of the scale code was last amended.

The retroactive effective date would be January 1, 2023, giving retailers sufficient time to modify their screensaver software.

Merchants may argue that the requirement to include the display of the primary indications along with screen savers, power savers or text would require massive, complex, and expensive modifications to already existing software. However, computer programming technology has greatly improved since the 1973, 1987, and 1993 language was adopted in the Scale Code. Such modifications are much easier and less complex today. The end result further assures “Equity in the Marketplace.”

The submitter requested voting status for this item in 2021.

During the Open Hearing session at the 2021 NCWM Interim Meeting, testimony was given by Mr. Jack Walsh (Town of Wellesley, Massachusetts/submitter). He explained that it had been observed in some cases where a weighing operation began however there was an error in the weightment likely attributed to the scale not starting on a zero-balance. Mr. James Cassidy (Massachusetts) and Mr. Lou Sakin (Massachusetts) agreed with Mr. Walsh.

Mr. John Barton (NIST OWM) pointed out that in 1993 Scales Code requirement S.1.1. was amended to allow scale displays to present other than a digital zero display (e.g., screen savers, store advertisements/special buys). This alternative type of display would only be permitted when the scale is on a zero-balance condition and any weighing operations would not be allowed to take place unless the scale was in a zero-balance condition. With these precautions in place, there seems to be no risk that a weighing operation would be in error due to that operation not starting on zero. Mr. Tim Chesser (Arkansas) stated that the proper function of this feature would be verified by NTEP and therefore, there is adequate protection against incorrect weightments due to not starting on zero.

Mr. Sakin suggested there be additional requirements if this feature is allowed to stand such as the display of a “split-screen” showing the screen saver and a digital zero display. Mr. Walsh and Mr. Cassidy agreed and stated they would be satisfied with a Developing status and would like to continue the development of this proposal.

Mr. Kevin Schnepf (California) agreed with NIST and felt the proposal should be withdrawn. Mr. Ken Ramsburg (Maryland) and Mr. Russ Vires (SMA) agreed with Mr. Schnepf.

During the Committee’s work session, the Committee concluded that the current requirement provides enough security to prevent fraudulent use and therefore recommended the item be Withdrawn.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2020 Annual Meeting, Mr. Steven Harrington (Oregon) commented to take a look at the retroactive date and give plenty of time for adjustments/modifications. Mr. Barton commented that there is a 1993 amendment to an existing requirement in place that allows for display other than zero and it would not be allowed to display other than zero if it was not on zero. That requirement requires an interlock that would not allow any weightments to take place unless a zero balance exists. Mr. Eric Golden (Cardinal Scale) echoed Mr. Barton’s comments and stated it would not be that hard to accomplish. However, there may be a cost for the operators of such devices. Mr. Vires commented that NTEP scales are tested for the functionality described by NIST OWM. Additionally, Mr. Vires concurs with Mr. Harrington and feels a 2027 retroactive date would be appropriate.

The WWMA agrees that this item does not have merit and should be Withdrawn.

At the SWMA 2020 Annual Meeting, during Open Hearings the SWMA heard from Mr. John Barton (NIST OWM) who stated that the handbook was amended in 1993 to permit systems to have screensavers, advertisements, or other alternate displays once a zero balance had been achieved. The SWMA also heard from Mr. Ken Ramsburg (Maryland) who stated that this issue was already covered by the NTEP evaluation process.

After consideration of this item the SWMA recommends that it be Withdrawn.

At the NEWMA 2020 Interim Meeting, testimony was heard from the submitter and others that there are situations where scales have not returned to zero indication when weighing from a displayed screensaver or out-of-balance-condition. Arguments were made that meeting S.1.1. (c) would resolve this problem and that it may be an enforcement issue and not a code issue. Industry commented that the retroactive date of 2023 may not allow for the appropriate time to make the necessary software changes for an alternative like a split screen. NEWMA believes this proposal has the potential to add information and clarity to the Handbook but should be investigated to ensure that current problem situations are not in violation of the Handbook as written.

The item was discussed as a potential voting item with the following language edit to include a split screen display.

(d) When a screen saver, power saver, or text is displayed prior to the beginning of a weighing operation both the operator and customer indicators shall display a split screen showing the numerical zero(s) condition when performing an actual weighing operation.
Retroactive January 1, 2024
(Amended 2021)

At the CWMA 2020 Interim Meeting, S&T Committee received comments from both regulatory officials and industry representatives that this item is not a needed addition to the handbook and recommended this item be withdrawn. We agree with the comments received, and recommend this item be withdrawn.

ABW - Automatic Bulk Weighing Systems

ABW-16.1 W A. Application, S Specifications, N. Notes, UR. User Requirements and Appendix D – Definitions: automatic bulk weighing system.

Source:
Kansas

Purpose:
Modernize the ABWS Code to more fully reflect the types of systems in use and technology available while still maintaining the safeguards of the current code and amend the ABWS definition by removing requirements that are included in specifications and providing guidance as to what amount of automation is required for an Automatic Bulk Weighing System.

Item Under Consideration:
Amend NIST Handbook 44, Automatic Bulk Weighing Systems Code as follows:

A. Application

A.1. General. – This code applies to ~~automatic bulk~~ weighing systems, ~~that is, weighing systems capable of adapted to the automatic automatically weighing of a commodity in successive drafts of a commodity without operator intervention.~~ ~~predetermined amounts automatically recording the no load and loaded weight values and accumulating the net weight of each draft.~~

(Amended 1987 ~~and 20XX~~)

S. Specifications

S.1. Design of Indicating and Recording Elements and Recorded Representations.

S.1.1. Zero Indication. — ~~Provisions~~ An automatic bulk weighing system shall ~~be made to~~ indicate and record a no-load reference value and, if the no-load reference value is a zero value indication, to indicate and record an out-of-balance condition on both sides of zero.

(Amended 20XX)

...

S.1.5. Recording Sequence. — ~~Provision~~ An automatic bulk weighing system shall ~~be made so that indicate~~ all weight values ~~are indicated~~ until ~~the completion of the~~ recording of the indicated value ~~is completed~~.

(Amended 20XX)

S.1.6. Provision for Sealing Adjustable Components on Electronic Devices. — Provision shall be made for applying a security seal in a manner that requires the security seal to be broken before an adjustment can be made to any component affecting the performance of the device.

S.1.7. No Load Reference Values — An automatic bulk weighing system shall indicate and record weight values with no load in the load-receiving element. No load reference values must be recorded at a point in time when there is no product flow into or out of the load receiving element. Systems may be designed to stop operating if a no load reference value falls outside of user designated parameters. If this feature is designed into the system then the no load reference value indicated when the system is stopped must be recorded, an alarm must activate, weighing must be inhibited, and some type of operator intervention must be required to restart the system after it is stopped.

(Added 20XX)

S.1.8. Loaded Weight Values — An automatic bulk weighing system shall indicate and record loaded weight values for each weighing.

(Added 20XX)

S.1.9. Net Weight Values — An automatic bulk weighing system shall calculate and record net weight for each weighing.

(Added 20XX)

S.1.10. Net Weight Accumulation — An automatic bulk weighing system shall accumulate and record the sum of all net weight values for all weighments performed during a weighing process.

(Added 20XX)

S.3. Interlocks and ~~Gate Control~~ Product Flow Control.

S.3.1. ~~Gate Position~~ Product Flow Control. — ~~Provision~~ An automatic bulk weighing system shall ~~be made to~~ clearly indicate to the operator product flow status ~~the position of the gates leading directly to and from the weigh hopper~~ load receiving element. Many types of equipment can be used to control the flow of product into and out of a load receiving element automatically including but not limited to gates, conveyors, augers, robots, pipes, tubes, elevators, buckets, etc.

(Amended 20XX)

S.3.2. Interlocks. — Each automatic bulk weighing system shall have operating interlocks to provide for the following:

- (a) Product cannot be cycled and weighed if the weight recording element is disconnected or subjected to a power loss.
 - (b) ~~can only cannot print record~~ a weight if ~~either of the gates equipment controlling product flow to or from the load-receiving element is in a condition which prevents product entering or leaving the load receiving element, leading directly to or from the weigh hopper is open.~~
 - (c) A “low paper” sensor, when provided, is activated.
 - (d) The system will operate only in the proper sequence in all modes of operation.
 - (e) When an overfill alarm is activated, the system shall indicate and record an overfill condition.
- (Amended 1993 **and 20XX**)

S.3.3. ~~Overfill Sensor~~**And Interference Detection.**

- (a) ~~An automatic bulk weighing system must have a means to detect when The the weigh hopper load-receiving element shall be equipped with an is overfilled. When an overfill condition exists sensor which will cause the feed product flow to the load receiving element must be stopped, gate to close an alarm must activate, activate an alarm, and inhibit weighing must be inhibited until the overfill condition has been corrected, and some type of operator intervention must be required to restart the system. An alarm could be many things including a flashing light, siren, horn, flashing computer screen, etc. The intent of an alarm is to make the operator aware there is a problem which needs corrected.~~
(Added 1993) (**Amended 20XX**)
- (b) ~~If the system is equipped with a Downstream storage devices and other equipment, permanent or temporary, lower garner or surge bin, that garner shall also which have the potential to interfere with weighment when overfilled or not functioning properly must have a means to prevent interference. When interference exist the system must stop, an alarm must activate, product flow must stop, weighing must be inhibited until the interference has been corrected, and some type of operator intervention is required to restart the system. be equipped with an overfill sensor which will cause the gate of the weigh hopper to remain open, activate an alarm, and inhibit weighing until the overfill condition has been corrected.~~
[Nonretroactive as of January 1, 1998]
(Amended 1997 **and 20XX**)

N. Notes

N.1. Testing Procedures.

N.1.1. Test Weights. – The increasing load test shall be conducted using test weights equal to at least 10 % of the capacity of the system:

- (a) on automatic-~~grain~~ bulk-weighing systems installed after January 1, 1984 **used to weigh grain;** and
 - (b) on other automatic bulk-weighing systems installed after January 1, 1986.
- (Amended 1987, **and 20XX**)

UR. User Requirements

UR.4. System Modification. – ~~Components of The~~ the automatic bulk weighing system, shall not be modified except when the modification has been approved by a competent engineering authority, preferably that of the engineering department of the manufacturer of the scale, and the official with statutory authority having jurisdiction over the scale.

(Amended 1991 ~~and 20XX~~)

And amend Handbook 44 Appendix D – Definitions as follows:

automatic bulk weighing system. – A weighing system ~~capable of adapted to the automatic~~ automatically weighing ~~of bulk commodities in successive drafts of a commodity without operator intervention, predetermined amounts, automatically recording the no-load and loaded weight values and accumulating the net weight of each draft.~~ [2.22]

Background/Discussion:

This item has been returned to the submitter for further development. For more information or to provide comment, please contact:

Mr. Doug Musick
Kansas Department of Agriculture
(785) 564-6681, doug.musick@ks.gov

NOTE: The updated version provided in 2016 and 2017 is that which is shown in Item under Consideration for this item. To view previous versions of the proposal, refer to S&T Committee reports within the National Conference on Weights and Measures (NCWM) Annual Reports at www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports.

The following rationale was offered by the submitter of this item for proposing changes to the NIST HB 44 ABWS Code:

- There are many systems in use that don't meet the definition for a "scale" or an "ABWS" or anything else in the Handbook. These changes will make it easier for regulators/inspectors to determine if a system should be evaluated as an "ABWS".
- The wording "automatic bulk weighing systems" should not be used in the definition of the same.
- The "no-load" and "loaded weight" recordings are important, but they are specifications and should not be included in the application code.
- The current code does not clearly define at what level of automation a system would be considered an ABWS versus a scale with some accessory equipment (hopper, tank, etc.). This is an attempt to more clearly distinguish which systems should be considered ABWSs.
- Human intervention could be many things. Some examples include, but are not limited to, pushing a reset button, turning power off then back on, typing a password, or entering a statement into a system log. The intent with including the term "human intervention" is to not include all systems which have a high degree of automation, only the ones that cycle repeatedly and can potentially operate without anyone present to observe weighing malfunctions.
- There are many types of load receiving elements that will work with an ABWS to include, but not limited to, tanks and hoppers so the previous language referring to hoppers was removed and replaced with the generic but accurate term "load receiving element".
- The old language implied separate sensors (e.g., bindicators) were required. Newer systems have already bypassed the use of separate sensors and utilize the weight indications to identify an overfilled condition, similar to how the indications are used to regulate product flow into the load receiving element for some

devices. Concerns for this approach have been raised for situations when an indicator is not functioning properly. That is a legitimate concern, but my reply then is: What is the backup for an indicator not indicating properly on any other type of device? This is something we know happens with other devices and commonly may not be detected until a device inspection and test is completed. Thus, one reason routine inspections and testing are required.

- Many types of equipment can be used to control the flow of product into and out of a load receiving element automatically, including but not limited to gates, conveyors, augers, robots, pipes, tubes, elevators, and buckets. Examples would be a conveyer delivering product; in such a case, the recording element should not record if the conveyer is still moving, or in the case of a pneumatic transfer tub the recording element should not record if the blower forcing air through the tube is still operating. Therefore, the old language referring to gates was removed and replaced with more generic terminology which can be applied to any equipment used to control product flow, not just gates.
- Many types of equipment can be used for downstream commodity storage including but not limited to hoppers, tanks, bins, flat storage, trucks, totes, rail cars, and pits. The language referring to “lower garner”, “surge bin,” etc., has been removed and replaced with more descriptive terms such as “downstream storage devices” to allow for all potential types of product handling equipment.
- A downstream storage device itself may not interfere with the weighing process directly, but it also cannot create a situation in which an overfill condition or some other malfunction of the equipment interferes with the weighing process. An example would be a grain storage hopper located under a weigh hopper in a position which, when grain is mounded up above the storage hopper, the grain touches the bottom of the weigh hopper and interferes with the weighing process. For this example, if the storage hopper can be lowered far enough below the weigh hopper so that the mounded grain cannot touch the weigh hopper when it reaches its’ maximum potential height then it would not need the capability to detect an overfill condition. The same scenario would apply to a truck parked under the load receiving element or a conveyer under the load-receiving element. Wording was added to ensure interference does not occur and if it does that the system activates controls to prevent weighing errors.

The Committee received updates on this item by its submitter, Mr. Doug Musick (Kansas) at the NCWM Interim and Annual Meetings of 2016 and 2017. The Committee agreed at each of these meetings to maintain the Developing status of the item to provide Mr. Musick the opportunity to fully develop the proposal.

At the 2018 NCWM Interim Meeting the Committee received comments from Mr. Musick, submitter of the item. Mr. Musick asked the Committee to keep the item in a Developing status as there are changes being made to the item based on comments and feedback received from recent regional meetings. During the Committee’s work session, it was agreed to keep the item Developing as requested by the submitter.

The Committee did not take comments during Open Hearings on Developing items at the 2018 NCWM Annual Meeting except to grant the submitter of a Developing item an opportunity to provide an update on the progress made to further develop the item(s) since the 2018 NCWM Interim Meeting. Mr. Loren Minnich (Kansas) gave an update on the Developing item to the Committee. Mr. Minnich stated that he or Mr. Musick plan on giving presentations at 2018 regional meetings to provide more detail on the item. Kansas hopes to have this item fully developed so it can be presented for vote next year.

NIST OWM provided the following written recommendations and comments to this item as feedback to the submitter and as part of its analysis of the S&T Committee’s 2018 agenda items:

- The changes proposed in ABW-3, ABW-4, and OTH-6 are all related attempts to help clarify and make it easier for field officials to determine the proper NIST HB 44 code to apply to some newer automatic weighing systems that have been introduced into the commercial arena. NIST OWM is unable to envision, based upon its review of these three proposals, how the proposals, whether considered individually, or combined and considered as a group, will accomplish this intended outcome. Addressing these issues in a piecemeal fashion may actually result in more confusion.

- With respect to this particular item, OWM reiterates its comments included in the analysis it provided to the Committee at the January 2018 Interim Meeting. The proposed changes to the Automatic Bulk Weighing Systems (ABWS) Code would expand its application to include some newer automatic weighing systems that currently fail to meet the application of the ABWS Code (or the current NIST HB 44 definition of an ABWS). OWM is not convinced this is a technically sound appropriate approach.
- The current ABWS Code applies to systems that automatically weigh a single commodity in successive drafts; yet we believe it was the submitter's intent in drafting some of the proposed changes that the code also apply to systems that automatically weigh more than one commodity at a time in successive drafts. For example, some seed treatment systems can be programmed to weigh multiple drafts of the same recipe, which, oftentimes, is made up of different ingredients (commodities) that get mixed together to form the treatment for a particular seed type. The various recipes to be weighed by a system can include not only different ingredients, but also different amounts of those ingredients, both of which can affect the price charged to customers. Expanding the application of the ABWS Code to address such systems may cause unnecessary confusion. For this reason, OWM prefers maintaining the current ABWS Code as is. Perhaps a better approach to addressing these systems and the resulting gaps in NIST HB 44 requirements would be to form a small group to further study such systems and recommend NIST Handbook 44 changes, possibly including consideration of a separate code to address these and other types of dynamic weighing systems.

The Committee agreed to carryover this item on its 2019 agenda in a Developing status and looks forward to being able to consider a final completed version.

At the 2019 NCWM Interim Meeting, Mr. Musick, submitter of the item, requested the Committee designate this item either "Developing" or "Informational" given the written comments the Committee received from CompuWeigh Company and NIST OWM in advance of the 2019 Interim Meeting. Mr. Musick reported he believes this item has merit. Automatic bulk weighing systems can provide greater accuracy in weighing bulk commodities that don't flow well when fed into or discharged from a hopper. The number of automatic weighing systems in the commercial marketplace is increasing and some of the more current systems don't seem to fit the application section of any particular NIST HB 44 code. This "newer" equipment needs to be addressed somewhere in NIST HB 44. Designating this item as "developing" or "informational" will provide time needed to address the concerns noted in the comments provided by CompuWeigh Company and NIST OWM.

In written comments and recommendations provided to the Committee in advance of the 2019 NCWM Interim Meeting, NIST OWM provided the Committee the following points concerning this item:

- OWM views the changes proposed to paragraph A.1. as expanding the scope of the current Automatic Bulk Weighing Systems Code to encompass types of systems not previously considered an ABWS.
- While OWM agrees with the concept of updating the current code to pave the way for its application to newer automated weighing systems, OWM believes the current draft proposal is not sufficiently developed enough to be considered for adoption.
- Critical parts of the NIST Handbook 44, Appendix D definition of "automatic bulk weighing system" and paragraph A.1. of the ABWS Code that are proposed for deletion provide the unique and distinguishing operational features of these systems and are therefore, very significant in identifying ABWS and are imperative for determining the application of the correct NIST HB 44 code.
- "Loaded weight value" (paragraph S.1.8.), "weighing process" (paragraph S.10.), and "weighment" (paragraphs S.1.8., S.1.9., and S.1.10) in this proposal are ambiguous terms that need to be clearly defined.
- The changes proposed to paragraph S.3.3.(a) and (b) need additional work. For example, it is important to specify in (a) that product flow to the load-receiving element must automatically stop rather than be stopped. Also, the terminology "other equipment" needs better clarification in the first sentence proposed for subparagraph (b). Additional language is needed to clarify the proper application of these two subparagraphs.

To view all of NIST OWM's comments and recommendations pertaining to this item, refer to NIST OWM's analysis of the different items on the S&T Committee's agenda posted on the NCWM website for the 2019 NCWM Interim Meeting.

At the 2019 NCWM Annual Meeting, the Committee was told by the submitter that there was no new information to update although, Mr. Minnich would be working to further develop this item for the state of Kansas. The Committee agreed to maintain this proposal as a Developing Item.

During the 2020 NCWM Interim Meeting, the submitter of the item acknowledged that there has been little progress on this item in the last few cycles and asked the Committee to retain the Developing status for the next cycle to allow more time to address the issues identified by various stakeholders. Mr. Vires, speaking on behalf of the SMA, commented that their group had no position on this item.

NIST OWM commented that the ABWS code was written for very specific types of devices and that these changes may broaden the scope of the code to include devices that the NIST HB 44 ABWS Code was not intended to apply to. NIST OWM also suggested that it may be more appropriate to amend the NIST HB 44 Scales Code to apply to certain automated systems being addressed by the submitter of this item.

The Committee agreed to retain the Developing status of this item during the work session.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items, this one included, were addressed in the subsequent 2021 NCWM Interim Meeting.

At the 2021 Interim Meeting Open Hearing session the submitter, Mr. Minnich stated that this proposal is being replaced by another item on this agenda (SCL-20.9) that is being developed to serve the same purpose. Mr. Minnich recommends the Committee withdraw this item.

During the Committee's work session, the Committee agreed with the submitter and chose to withdraw the item.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, the Committee heard comments from Mr. Vires, speaking on behalf of the SMA reported that the SMA does not have an opinion at this time. Mr. Barton stated that the submitter proposal to modify the ABWS Code by introducing terminology that reflects the newer technology in use today. However, Mr. Barton believes that there is too much focus being given to "automation" and not enough focus on the unique and specific characteristics of ABWS devices. Also, by removing the description of ABWS from the Applications Section of the Code, this proposal will widen the scope to include systems not intended to be covered under the ABWS Code.

The Committee agreed to recommend this item be Withdrawn. The Committee recognizes that there have been no changes to the proposal since the last cycle of hearings.

At the SWMA 2019 Annual Meeting, Mr. Vires stated SMA had no position on this item at this time. The Committee decided to make No Recommendation on this item.

At the NEWMA 2019 Interim Meeting, the Committee and the body agree with comments made in the Western Weights and Measures Association report that this item should be withdrawn as no changes or additional information has been provided since 2016. No comment was heard during open hearings.

At the CWMA 2019 Interim Meeting, Mr. Minnich commented that work is continuing on this item to address concerns that have been raised and would like it to remain developing. We recommend the item remain Developing.

At the 2020 WWMA Annual Meeting, the WWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 SWMA Annual Meeting, the SWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 NEWMA Interim Meeting, the NEWMA adhered to a condensed agenda due to the COVID-19 pandemic and did not consider this item.

At the 2020 Interim Meeting, Mr. Minnich the developer of the item gave an update to the item to the CWMA S&T Committee and requested the item remain developing to allow for more time to fully develop the item. We ask the NCWM S&T Chair to give the developer a deadline of one year to present substantial progress on this item or to withdraw it.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

WIM - Weigh-in-motion systems used for vehicle enforcement screening tentative code

WIM-19.11 W Title of Tentative Code, S.1.7.1. Values to be Recorded., S.4.1. Designation of Accuracy., N.1. Test Procedures, T.2. Tolerance Values for Accuracy Class A Classes., UR.1.1. General, Table 1. Typical Class or Type of Device for Weighing Applications.

Source:

Intercomp Company

Purpose:

Provide for certification of non-legal for trade weigh-in-motion scales for vehicles.

Item Under Consideration:

Amend NIST Handbook 44, Weigh-in-Motion Systems used for Vehicle Enforcement Screening Code as follows:

Section 2.25. Weigh-In-Motion Systems

Used for Vehicle Enforcement Weight Screening – Tentative Code

...

S.1.7.1. Values to be Recorded. – At a minimum, the following values shall be printed and/or stored electronically for each vehicle weighment:

...

- (j) violations if applicable, as identified in paragraph S.2.1. Violation Parameters, which occurred during the weighing of the vehicle; and

...

S.2.1. Violation Parameters (if applicable). – The instrument shall be capable of accepting user-entered violation parameters

...

S.4.1. Designation of Accuracy. – Weigh-in-motion systems meeting the requirements in table T.2.2. of this code shall be designated with appropriate accuracy class, as accuracy Class A.

...

N.1. Test Procedures

...

N.1.4. Test Speeds. – All dynamic tests shall be conducted up to the intended speed limit of the WIM system or within 20 % below or at the posted speed limit, whichever is lower.

N.1.5. Test Procedures.

N.1.5.1. Dynamic Load Test. – The dynamic test shall be conducted using the test vehicles defined in N.1.1. Selection of Test Vehicles. The test shall consist of a minimum of 20 runs for each test vehicle at the speed as stated in N.1.4. Test Speeds.

At the conclusion of the dynamic test there will be a minimum of 20 weight readings for each single axle, axle group, and gross vehicle weight of the test vehicle. The tolerance for each weight reading shall be based on the percentage values specified in Table T.2.2. ~~Tolerances for Accuracy Class A.~~

...

T.2. Tolerance Values for Accuracy Classes ~~Class A.~~

T.2.2. Tolerance Values for Dynamic Load Test. – The tolerance values applicable during dynamic load testing are as specified in Table T.2.2.

Table T.2.2. Tolerances for Accuracy Class A	
Load Description*	Tolerance as a Percentage of Applied Test Load
Axle Load	± 20 %
Axle Group Load	± 15 %
Gross Vehicle Weight	± 10 %
* No more than 5 % of the weighments in each of the load description subgroups shown in this table shall exceed the applicable tolerance.	

Table T.2.2. Tolerances for Accuracy Classes				
	Tolerance as a Percentage of Applied Test Load			
Load Description*	<u>D</u>	<u>C</u>	<u>B</u>	<u>A</u>
<u>Axle Load</u>	<u>± 5 %</u>	<u>± 10 %</u>	<u>± 15 %</u>	<u>± 20 %</u>
<u>Axle Group Load</u>	<u>± 3 %</u>	<u>± 7 %</u>	<u>± 10 %</u>	<u>± 15 %</u>
<u>Gross Vehicle Weight</u>	<u>± 1 %</u>	<u>± 2 %</u>	<u>± 5 %</u>	<u>± 10 %</u>
* No more than 5 % of the weighments in each of the load description subgroups shown in this table shall exceed the applicable tolerance				

...

UR.1.1. General. – The typical class or type of device for particular weighing applications is shown in Table 1. Typical Class or Type of Device for Weighing Applications.

Table 1. Typical Class or Type of Device for Weighing Applications	
Class	Weighing Application
A	Screening and sorting of vehicles based on axle, axle group, and gross vehicle weight.
<u>B</u>	<u>Industrial Screening, GVW axle, and axle group checkweighing</u>
<u>C</u>	<u>TBD</u>
<u>D</u>	<u>TBD</u>
Note: A WIM system with a higher accuracy class than that specified as “typical” may be used.	

Background/Discussion:

This item has been returned to the submitter for further development. For more information or to provide comment, please contact:

Mr. Jon Arnold
Intercomp Company
(763) 476-2613, jona@intercompcompany.com

Vehicle and axle weight screening has both safety and enforcement ramifications. Certified WIM systems for vehicle screening for enforcement decreases queues at static weigh stations with cost and efficiency benefits and provides certified WIM system for identifying cause for ensuing static weighing of potential overweight commercial vehicles.

Further, OSHA requires certified systems for establishing weights (vehicle and cargo) prior to lifting cargo from vehicles, and WIM systems can provide weights at non-legal for trade tolerances, but currently are not capable of being certified.

The original tentative code was just for vehicle screening and sorting vehicle weight to determine if a static weighment is necessary. This proposal widens the scope of use and suggests additional accuracy classes as was originally planned. Modifying 2.25 is more efficient than suggesting adding an entirely new section (ex. 2.26.) with significant overlap with 2.25.

NIST OWM personnel was unable to attend the 2019 NCWM Interim Meeting. The Department of Commerce was closed due to the partial Federal government shutdown for lack of appropriations. In written analysis shared with the Committee in advance of the Interim Meeting, NIST OWM provided the following with respect to this item:

OWM points out that the changes being recommended in this proposal if adopted would set a precedent where the scope of NIST Handbook 44 (as described in the Introduction – sections A. and F. and in the General Code, paragraph G-A.1.) would expand to also apply to many devices that are used in non-commercial applications. If it is the intent of the submitter to create a means by which NIST Handbook 44 could be applied to a specific category of devices or specific application of a device, OWM encourages the submitter to identify that objective in detail as part of this proposal.

OWM recognizes that many industry officials (and others) wanting to establish a quality assurance program for weighing or measuring devices used for inventory or production control, collection of operational data, or other non-commercial purposes will often use the requirements and procedures outlined in NIST Handbook 44 to establish guidelines however, the intended application is for those devices used in commercial transactions, law enforcement, or collection of statistical information by government agencies.

OWM believes that to expand the application of NIST Handbook 44 to devices used in applications other than those listed above will lead to confusion and place an even greater burden on weights and measures officials, many of which are severely challenged to fulfill their current obligations for the regulation of commercially-used devices. OWM believes that the principal reason for regulation of commercial devices is to ensure correct and fair measurement/weighting and thereby protect buyers and sellers of commodities.

OWM believes this item should be returned to the submitter for additional development and clarification.

During the 2019 Interim Meeting Open Hearings, the Committee heard comments from Mr. Russ Vires speaking on behalf of the SMA. Mr. Vires stated that the SMA has no position on this item but looks forward to analysis. The submitter of the item, Mr. John Arnold (Intercomp) stated that the item should be developing. Intercomp plans on adding more data. During the Committee's work session, the members agreed that this item should be assigned a Developing Status.

During the 2019 NCWM Annual Meeting, the Committee heard no additional comments on this item. The Committee agreed to retain the Developing status on this item.

During the 2020 NCWM Interim Meeting, the Committee noted that there have not been any updates provided by the submitter of this item since the proposal was introduced in 2019. Mr. Vires, speaking on behalf of the SMA,, Mr. Kevin Schnepf (California), Mr. Charles Stutesman (Kansas) and Mr. Steve Harrington (Oregon) all recommended this item be Withdrawn.

During the Committee's work session, members of the Committee agreed with those who had recommended the item be withdrawn after also considering there had been no recent updates received by the submitter. The Committee agreed to withdraw the item.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, Mr. Vires stated that the SMA takes no position on this item and looks forward to more input from the submitter. Mr. Eric Golden (Cardinal Scale) stated that he has discussed the item with the submitter. Mr. Golden stated that the submitter seeks to develop a standard to be used for scales used in shipping ports to satisfy requirements established by the Maritime regulation SOLAS (Safety of Life at Sea) and OSHA (Occupational Safety and Health Administration). Mr. Golden does not support the tolerances proposed stating that they are excessive. Mr. Golden also stated that he does support the overall concept and the efforts of the submitter.

The Committee recommended this item be withdrawn given that the proposal seeks to include requirements for non-commercial weighing devices and that this approach could possibly increase the scope of NIST HB 44 to an excessive level.

At the SWMA 2019 Annual Meeting, Mr. Vires stated that SMA had no position on this item at this time. Ms. Diane Lee (NIST OWM) stated that this item sets a precedent expanding the scope of NIST Handbook 44 beyond commercial applications.

The Committee recommends this item be Withdrawn, based on it being in conflict with NIST Handbook 44 Introduction Sections A and F, and General Code Paragraph G.A.1 which stated that the code only applies to commercial devices. The Committee doesn't want to open the door to approval of any other non-commercial devices.

At the NEWMA 2019 Interim Meeting, the Committee and the body agree that this item be withdrawn. During open hearing, Mr. Richard Suiter (Richard Suiter Consulting) commented that opposition to this item is primarily due to the use of the term "non-commercial" and NIST HB 44 deals with commercial device applications.

At the CWMA 2019 Interim Meeting, Mr. Stutesman commented that this item is not necessary and that each jurisdiction can determine how to properly evaluate devices used in this application to satisfy OSHA requirements. We recommend the item be Withdrawn.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

LMD - Liquid Measuring Devices

LMD-19.1 V UR.4.2. Security for Retail Motor-Fuel Devices.

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert's Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

(Note: This replaces Item GEN-1: G-A1 Commercial and Law-Enforcement Equipment. and G-S.2. Facilitation of Fraud.)

Source:

Arizona, Florida, Maine, Michigan and Cambridge, Massachusetts; Skimmer Task Group

Purpose:

To prevent access and tampering by unauthorized persons to any area of the device where electronic financial transactions occur, credit card information is obtained, and or personal information is stored or transmitted.

Item Under Consideration:

Amend NIST Handbook 44, Liquid Measuring Device Code as follows:

UR.4.2. Security for Retail Motor-Fuel Devices (RMFD). Any retail motor fuel device capable of conducting customer-initiated electronic financial transactions must be secured to substantially restrict the ability of unauthorized persons to manipulate it to obtain payment information that could be used to commit fraud. The following is a non-exhaustive list of ways that restriction of such manipulation may be accomplished:

- (a) A physical lock, locking device, or a physical securing device that will restrict access to the electronic financial transaction compartment of the RMFD. A lock, locking device, or securing device shall not be manipulated with commonly available tools. A lock shall not allow the use of a universal key. A universal key is a key that is readily available in the market or can be easily purchased in a hardware or common retail store. A single non-universal key for all of the like devices at a retail facility or for all of the like devices at a chain of retail facilities is acceptable or;**
- (b) Electronic alarming or disabling of the equipment if unauthorized access is attempted; or**
- (c) Advanced payment acceptance technologies that increase protections against the theft of payment information itself or do not allow access to such information in a form that may be used to commit fraud; or**

(d) Another security solution that has been approved by the local or state weights and measures jurisdiction with authority.

(Added 2021)

Background/Discussion:

(NOTE: Additional information can be found in the 2018 NCWM Annual Meeting Report www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports.)

A significant potential financial impact to consumers and credit issuing companies has been recognized by weights & measures jurisdictions and prompts the need to offer more protection to both buyer and seller in these transactions. The current design of these devices offers little to no barrier to fraud through theft of credit information. A general belief is that the current design of retail motor-fuel dispensers (RMFDs), in most cases, already violates G.S.2. by facilitating easy access to allow installation of these fraudulent card reading devices. Therefore, some NCWM members are advocating stronger means to be implemented to decrease the potential for fraudulent activity with these devices.

The Florida Department of Agriculture and Consumer Services estimates that, on average, each skimmer results in 100 counterfeit cards, each of which are used to make \$1,000 in fraudulent purchases. In other words, a single skimmer typically leads to \$100,000 in theft. This is recognized as a nationwide problem that causes millions of dollars in fraudulent charges to consumers, device owners, and banking institutions each year. One approach to mitigate the detrimental effect on consumers is to implement upgraded security measures on the weighing and measuring devices that fall within the guidelines of NIST HB 44.

One possible opposing argument to this proposal is that these preventative measures should be in User Requirements instead of in Specifications, but this is intended to be a long-term solution. The State of Florida has enacted legislation to require device users to add security measures. They have found that most owner/operators have chosen to use security seals or non-standard locks on the dispensers and that 85% of the skimming equipment being found is in devices with user applied security measures. User-applied security measures are not as effective as electronic security and/or unique, tamper proof locks.

Manufacturers of these devices may argue that the cost to make the necessary upgrades will be prohibitive. This item is not intended to be retroactive, and the cost of the additional security measures will be universal and not place any manufacturer at a competitive disadvantage. Several manufacturers of electronic security systems designed for retail motor fuel dispensers have products available and at least three new manufacturers of low-cost systems have recently come into the marketplace (at least one of them is working with OEM manufacturers and the security systems are being integrated into newly manufactured dispensers).

During the 2018 NCWM Interim Meeting, the Committee heard testimony regarding the installation of fraudulent credit card reading devices on retail motor fuel dispensers and the resulting millions of dollars in fraudulent charges to consumers, device owners and banking institutions each year. In general, testimony provided to the Committee acknowledged the problem presented by the illegal use of “skimmers.” However, there was not a consensus as to whether this is an issue to be addressed by weights and measures officials.

The Committee agreed to make this an “Assigned” item and requesting the formation of a Task Group (TG) to address this issue. The Committee identified stakeholders as likely members of such a task group as individuals from convenience store associations, meter manufacturers, retailers, petroleum marketers association, weights and measures regulators (one from each region), and the NIST Office of Weights and Measures.

At the 2018 NCWM Annual Meeting the Committee received an update on this item from the Chairman of the NCWM Skimmer Task Group (TG), Mr. Hal Prince (Florida). Mr. Prince reported work is ongoing on this item and much of the TG discussion has revolved around two key questions:

1. Is this a weights and measures issue that NCWM should take on?

2. If so, does weights and measures have the authority to require manufacturers and users of commercial weighing and measuring equipment to take whatever steps needed to ensure such equipment prevents unauthorized access to non-metrological changes to the equipment?

Mr. Prince further reported that members of the TG were recently surveyed and asked these questions, but results are not yet available. It is hoped more information will be available to report at the next (2019) NCWM Interim Meeting. See the S&T Committee 2018 Final Report for additional details.

During the 2019 NCWM Interim Meeting, the Skimmer TG presented the Committee new language developed to address issues of fraud due to skimmer technology. The Skimmer TG's revised proposal would add a new User Requirement paragraph, UR.4.2., to the Liquid Measuring Device Code in NIST Handbook 44 and eliminate the original proposed paragraphs G-A.1. and G-S.2. in the General Code of NIST Handbook 44.

This item is not intended to be retroactive, and the cost of the additional security measures will be universal and not place any manufacturer at a competitive disadvantage. Several manufacturers of electronic security systems designed for retail motor fuel dispensers have products available and at least three new manufacturers of low-cost systems have recently come into the marketplace (at least one of them is working with OEM manufacturers and the security systems are being integrated into newly manufactured dispensers).

During the 2019 Interim Meeting Open Hearings, the NCWM S&T Committee heard comments to agenda item GEN-1 and the Skimmer Task Group provided an update of their activities and actions. The comments heard during the Open Hearing and Skimmer Task Group updates and actions are summarized below:

- From a polling of its members, the Skimmer Task Group determined that the issue was within weights and measures purview by a vote of 11-2. As such, the task group drafted a user's requirement during their meetings to replace paragraphs G-A.1. and G-S.2. with paragraph UR 4.2. Security for RFMDs to the Liquid Measuring Device Code in NIST Handbook 44;
- Questions were raised whether this revised proposal was intended to be retroactive or nonretroactive. The TG Chair, Mr. Hal Prince (Florida) stated that a determination has not been made but it would be a decision to be made by the TG. During the NCWM S&T Committee work session, the members agreed that this item should be given an Informational status to allow for full vetting of the new proposal by the NCWM membership.

At the 2019 NCWM Annual Meeting, the Committee heard from Mr. Prince providing an update and stating that during the period this item had been an Assigned item, the TG met routinely until the proposal was made Informational by the Committee at the 2019 Interim Meeting. Mr. Prince noted that the original proposal had been revised to only recommend a new user's requirement be added to the NIST Handbook 44 Liquid Measuring Devices Code. Mr. Prince also recommended that the Committee maintain the item's current Informational status for at least one additional cycle to ensure that it is fully vetted and to possibly be presented in community outreach programs to gain feedback from additional stakeholders. The Committee agreed to maintain Informational status.

During the 2020 NCWM Interim Meeting Open Hearings the Committee heard from TG Chair Prince who reported that the task group met in January 2019 to finalize the language in the proposal, and the task group believes this item should be given a Voting status.

The following support this item moving forward with Voting status: Mr. Kevin Schnepf (California), Mr. Brent Price (Gilbarco), Mr. Charlie Stutesman (Kansas), Mr. Tim Chessner (Arkansas), and Mr. Dmitri Karimov (MMA).

Mrs. Tina Butcher (NIST OWM) restated OWM's previous comments that this is not a weights and measures issue, but that W&M should play a cooperative role with law enforcement concerning skimmers. Mrs. Butcher asked, if dispenser owners are responsible for skimmers which may be installed without their knowledge and what is the cost to the owner to deter the installment of skimmers? Mr. Prince responded that this proposal gives the States the authority to enforce security and that the cost to enforce the security is variable depending on the method used. It will be up to each state as to how to enforce this requirement.

Ms. Fran Elson Houston (Ohio) noted that credit card companies have extended the time allowed for device owners to bring dispensers in compliance with their security standards for credit card readers and Mr. Prince responded that the TG did address Ms. Houston's information concerning compliance with credit card company requirements. Mr. Jimmy Cassidy (Massachusetts) expressed his support for this item in going forward with a Voting status. Mr. Mike Harrington (Iowa) noted that he believes the issue is more complex than just the issue of skimmers.

During the Committee's work session, the Committee agreed that this item should be given a Voting Status.

During the Committee's 2020 NCWM Annual Meeting Open Hearings that was held as a virtual meeting in January 2021, the Committee heard comments from many who were in support of this item moving forward as a voting item, to include Mr. Chessser, Mr. Clark Cooney (California), Mr. Prince, Mr. Cassidy, Mr. John McGuire (New Jersey), Mr. John Albert (Missouri), Mr. Mike Brooks (Arizona), Mr. Paul Floyd (Louisiana), Mr. David Aguyao (San Luis Obispo County, California), Mr. Craig VanBuren (Michigan), Mr. Troy Brewer (West Virginia), Mr. Price, and Mr. Karimov.

Those State weights and measures against this item moving forward as a voting item included, Mr. Stutesman, Mr. Ken Ramsburg (Maryland), Mr. Jim Willis (New York), and Mr. Sean Brown (Ohio). Mr. Ramsburg noted that this could relate to illegal activities concerning other devices. NIST OWM reiterated comments that are included in their analysis and presented in previous meetings and noted that although they agree that weights and measures should play a cooperative role in helping to identify, reduce and/or eliminate the use of skimmers. NIST OWM expressed concerns with skimmers not being a primary focus of weights and measures since they do not affect the measurement transaction and concerns with holding the device owner accountable for an illegal activity that is many times outside of the device owner's control.

During the Committee's 2020 Annual Meeting work session, the Committee agreed that this item be forwarded as a Voting Item to be ratified at the next NCWM in-person meeting.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, Mr. Cooney supported this item, as did Mr. Price.

The Committee acknowledges this item is an Informational item and that during the July 2019 NCWM Annual Meeting the submitters recommended this item be vetted further during the next cycle.

At the SWMA 2019 Annual Meeting, Chair Prince stated that he and the Task Group believe the item is fully developed and they support this item being made a Voting Item. Mr. Chessser, Mr. Price, and Mr. Ed Coleman (Tennessee) also supported moving the item to a Voting Item. The Committee agreed that this item is fully developed and recommends making it a Voting Item.

At the NEWMA 2019 Interim Meeting, the Committee and the body agree that this item should have a voting status. During Open Hearings, Mr. McGuire offered support of the item, while Mr. Willis commented that New York feels this item does not belong in the NIST HB44 but supports actions to thwart fraud. Mr. Marc Paquette (Vermont) agrees with New York and has no objection moving this item forward for voting.

At the CWMA 2019 Interim Meeting, several regulators commented in support of moving the item forward as voting. We recommend the item move forward as Voting.

At the WWMA 2020 Annual Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

At the SWMA 2020 Annual Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

Regarding the NEWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the NEWMA 2020 Interim Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

At the CWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the CWMA 2020 Interim Meeting, the only comments that the S&T Committee heard during Open Hearings on this item were from NIST OWM, who expressed concerns as to how this item would be enforced and what added burdens this item would place on device owners. The Committee would like to thank the skimmer task group for the work that they put into this item. We feel this item is fully developed and recommend that it move forward as a Voting Item.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

LMD-20.2 V S.1.6.10. Automatic Timeout – Pay-at-pump Retail Motor-Fuel Devices.

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert's Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

(NOTE: The Item under Consideration includes changes from the Committee during the 2020 NCWM Interim Meeting.)

Source:

7-Eleven, Inc.

Purpose:

Allow additional time to automatic timeout on retail motor fuel dispensers, as conditions may warrant.

Item Under Consideration:

Amend NIST Handbook 44, Liquid Measuring Device Code as follows:

S.1.6.10. Automatic Timeout – Pay-At-Pump Retail Motor-Fuel Devices. – *Once a device has been authorized, it must deauthorize within three minutes ~~two minutes~~ if not activated. Reauthorization of the device must be performed before any product can be dispensed. If the time limit to deauthorize the device is programmable, it shall not accept an entry greater than three minutes ~~two minutes~~.*
[Nonretroactive as of January 1, 2017]

(Added 2016) (Amended 2019 and 2021)

Background/Discussion:

At certain large locations, the existing two-minute timeout is insufficient and frustrating for some customers. In addition to facility size, customer needs also often justify the need for a longer timeout. For instance, customers with limited mobility, customers tending to children or elderly, and customers who opt to utilize restroom facilities before dispensing their fuel have expressed a desire for additional time. The need for an automatic timeout is valid to ensure

that a customer's purchased fuel is not dispensed to another customer or subject to theft; however, additional time is needed in certain situations and facilities should be enabled to apply additional time if facility conditions and/or customer needs warrant.

During the 2020 NCWM Interim Meeting Open Hearings the Committee heard from Mr. Charlie Stutesman (Kansas) who supports this item as a Voting item. Mr. Loren Minnich (Kansas) reported that regional associations supported the item with amendments to the time to reflect 3 minutes. Mr. Kevin Schnepf (California) and Mr. Tim Chesser (Arkansas) both expressed support for this item. Mr. Brent Price (Gilbarco) supported this item with changes. Ms. Diane Lee (NIST OWM) noted that NIST OWM believes the 2-minute time limit is appropriate. Per the NIST OWM comments, if 3 minutes is selected, consideration should be given to when a customer would be at risk of use of the dispenser by another customer and how likely a customer's transaction could be compromised. Also, per the NIST OWM analysis, the proposal recommends "180 seconds (or five minutes where conditions warrant)." NIST OWM believes specifying two units of time is confusing and that 5 minutes is too long.

Ms. Lee also recommended that any changes made to this paragraph also be made to similar paragraphs for other retail fuel devices including VTM, LPG, MFM, H₂, and EVSE systems.

Mr. Dmitri Karimov (MMA) supports regional and NIST OWM recommendations. Mr. Ken Ramsburg (Maryland) noted that he believes the 5-minute time-out period is excessive. Mr. Chesser stated that he believes the changes recommended would require that a new Form 15 be submitted.

Mr. Micheal Keilty (Endress + Hauser) recommended that the Committee look at a proposal in 2016 or 2017 from North Carolina that referenced elderly consumers who may need additional time between authorization and product dispensing. Mr. Keilty noted that he believes this item needs more work and noted that devices are already permitted up to 3 minutes for time out. Mr. Jim Willis (New York) noted he supported the amendments presented in the proposal. Mr. Stutesman stated that any time period allowed for time-out on dispensers must align with programming the POS. Mr. Stutesman further stated that the POS is not able to distinguish whether a transaction was initiated by credit card payment or cash payment and that the recommended changes may require corresponding changes to the POS.

During the Committee's work session, the Committee agreed that this item should be given a Voting status with changes to adopt a three-minute time out.

During the Committee's 2020 Annual Meeting Open Hearing that was held as a virtual meeting in January 2021, the Committee heard comments from many who were in support of this item to include Mr. Chesser, Mr. Clark Cooney (California), Mr. Stutesman, Mr. John Albert (Missouri), Mr. Willis, Mr. Steve Harrington (Oregon), Mr. Karimov, and Mr. Price. Mr. Keilty noted that the MFM and Hydrogen Codes, as well as other codes, have a 2-minute timeout requirement which conflicts with the proposed 3-minute time out. Ms. Lee provided an update on the purpose of the timeout feature and noted that NIST OWM supports moving from a 2-minute to a 3-minute time out feature and recommends that consideration be given to changing the VTM, LPG, MFM, H₂, and EVSE systems from a 2-minute to a 3-minute timeout. Many States agreed that other appropriate measuring device codes should be changed from a 2-minute timeout to a 3-minute timeout.

During the Committee's 2020 NCWM Annual Meeting work session, the Committee agreed that this item, as it is presented in the 2020 Annual meeting agenda, be forwarded as a Voting item to be ratified at the next NCWM in-person meeting.

The following is the item, as amended and included on the S&T Committee Agenda as LMD-20.2. for consideration during the 2020 NCWM Annual Meeting:

S.1.6.10 Automatic Timeout – Pay-At-Pump Retail Motor-Fuel Devices. – Once a device has been authorized, it must de-authorize within three minutes ~~two minutes~~ if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than three minutes ~~two minutes~~.

[Nonretroactive as of January 1, 2017]

(Added 2016)

For reference, below is the item as presented during the 2020 NCWM Interim Meeting, S&T Committee Open Hearing:

S.1.6.10. Automatic Timeout – Pay-At-Pump Retail Motor-Fuel Devices. – Once a device has been authorized, it must de-authorize within ~~two minutes~~ 180 seconds (or five minutes where conditions warrant) if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than ~~two minutes~~ 180 seconds (or five minutes where conditions warrant).

[Nonretroactive as of January 1, 2017]

(Added 2016)

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, Mr. Kurt Floren (Los Angeles County, California), Mr. Price, Mr. Clark Cooney (California), and Ms. Cadence Matijevich (Nevada) stated their support of the proposal but recommended a change to the proposed 5-minute time period in that it was excessive.

The Committee agreed that the item has merit and should be given Voting status provided that the time period stated in the proposal as 180 seconds should be stated as “three minutes” and that the “(or five minutes where conditions warrant)” be deleted from the proposal as shown below.

S.1.6.10. Automatic Timeout – Pay-At-Pump Retail Motor-Fuel Devices. – Once a device has been authorized, it must de-authorize within ~~two minutes~~ 180 seconds ~~three minutes (or five minutes where conditions warrant)~~ if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than ~~two minutes~~ 180 seconds ~~three minutes (or five minutes where conditions warrant)~~.

[Nonretroactive as of January 1, 2017]

(Added 2016)

At the WWMA 2020 Annual Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

At the SWMA 2019 Annual Meeting, Mr. Price stated that S.1.6.10. is confusing where it states “(or five minutes where conditions warrant)”. Mr. Price would like to see that statement removed.

The Committee agrees with Mr. Price’s comment and has modified the amendment as recommended. The Committee recommends this item as a Voting Item with the modified language.

Automatic Timeout – Pay-At-Pump Retail Motor-Fuel Devices. – Once a device has been authorized, it must de-authorize within ~~two minutes~~ 180 seconds (or five minutes where conditions warrant) if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than ~~two minutes~~ 180 seconds (or five minutes where conditions warrant).

[Nonretroactive as of January 1, 2017]

At the NEWMA 2019 Interim Meeting, the Committee and the body agreed that this item be moved to a Voting Status but with a change in language. The Committee believes 3-5 minutes is ambiguous and believes a specific timeout should be used. The suggested language is as follows:

S.1.6.10. Automatic Timeout – Pay-At-Pump Retail Motor-Fuel Devices. – Once a device has been authorized, it must de-authorize within ~~two minutes 180 seconds~~ three minutes (or five minutes where conditions warrant) if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than ~~two minutes 180 seconds~~ three minutes (or five minutes where conditions warrant).

[Nonretroactive as of January 1, 2017]

(Added 2016)

During open hearings, Mr. John McGuire (New Jersey) and Mr. Frank Greene (Connecticut) stated that he was unsure of what circumstances would lead to a need for a 5-minute timeout. Mr. Jason Flint (New Jersey) advised the group that the submitter was concerned about ADA compliance and other issues.

At the CWMA 2019 Interim Meeting, Mr. Stutesman commented that he supports the item if the 180 seconds is changed to 3 minutes and is concerned with the phrase “where conditions warrant” in relation to the 5-minute timeout and would support the item as voting with this removed. Mr. Ivan Hankins (Iowa) also supports these changes. We recommend this item move forward as a Voting Item with the above amendments.

At the SWMA 2020 Annual Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

Regarding the NEWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the NEWMA 2020 Interim Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

Regarding the CWMA 2020 Annual Meeting, no Meeting was held due the COVID-19 pandemic.

At the CWMA 2020 Interim Meeting, the S&T Committee heard comments in support of this item from NIST OWM and state regulatory officials. We feel this item is fully developed and recommend this item move forward as a Voting Item.

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

LMD-20.3 W UR.1.1. Discharge Hose.

Source:

Connecticut

Purpose:

To prevent the inadvertent selection of a grade of motor fuel.

Item Under Consideration:

Amend NIST Handbook 44, Liquid Measuring Device Code as follows:

UR.1.1. Discharge Hose.

UR.1.1.1. Length. – The length of the discharge hose on a retail motor-fuel device

- (a) shall be measured from its housing or outlet of the discharge line to the inlet of the discharge nozzle;

- (b) shall be measured with the hose fully extended if it is coiled or otherwise retained or connected inside a housing; ~~and~~
- (c) shall not exceed 5.5 m (18 ft) unless it can be demonstrated that a longer hose is essential to permit deliveries to be made to receiving vehicles or vessels; ~~and~~
- (d) shall be so situated and located to prevent the inadvertent selection of a fuel grade.**

An unnecessarily remote location of a device shall not be accepted as justification for an abnormally long hose.

(Amended 1972 ~~and~~ 1987, **and 20XX**)

Background/Discussion:

The submitter has received credible complaints regarding the way the hose is situated so that the hose can bump into grade selection buttons, causing an inadvertent grade selection to a higher grade. The following are the summary, conclusions and photos from an August 8, 2019, investigation report. The complete report is available at www.ncwm.com/publication-16.

Summary

- Complainant stated he selected regular and noticed at the end of the transaction that he was charged for premium.
- The manager on duty stated to the complainant that this was common, and the dispenser defaulted to a premium grade because the regular was not pressed hard enough.
- The complainant was refunded the difference in price.
- Inspector Daha and Supervisor Giliberto could not recreate the defaulting of the grade at this station of another station with the same model dispensers.
- Inspector Daha and Supervisor Giliberto were able to select the premium grade through “hose bump” that didn’t involve pressing the button with hands or the nozzle.
- A current petroleum service man and a former service man who is a current weights & measures inspector both stated that they are not aware of any way to program a dispenser to default to a specific grade and also they are aware of the possibility of “hose bump.”

Conclusions

- The manager on duty at the gas station may have misspoken when he stated to the complainant that the dispenser defaults to premium if a grade is not selected in time by the customer.
- A potential way premium may have been activated in the complainant’s transaction was through “hose bump.”
- The model dispenser at this station is NTEP approved and would be difficult to order repaired or stop use.
- Consumer Protection is making a referral Darrell Flocken (NTEP Administration) regarding the approval of this dispenser.
- Possible remedies could include changing springs on the buttons to make them difficult to select.



Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

VTM - Vehicle Tank Meters**VTM-18.1 D S.3.1 Diversion of Measured Liquid and S.3.1.1. Means for Clearing the Discharge Hose and UR.2.6. Clearing the Discharge on a multiple-product, single discharge hose.**

(NOTE: At the 2020 NCMW Interim Meeting the Committee agreed to combine both VTM-18.1 and VTM-20.1. Both Items are now one item under VTM-18.1.)

Source:

New York and NIST OWM (Carryover from 2018, VTM 1-B) and Murray Equipment, Inc., Total Control Systems

Purpose:

Provide specifications and user requirements for manifold flush systems on a multiple-product, single-discharge hose. Recognize that there is a balance between a mechanism that provides an important safety benefit but also, if used incorrectly, facilitates fraud. Ensure that VTM owners understand their responsibilities when installing such a system and ensure uniformity in enforcement throughout the country and clarify the paragraph to protect vehicle motor fuel quality, retain safe operating procedures when handling vehicle motor fuels, and to prevent fraud during delivery of vehicle motor fuels from vehicle tank meters.

Item Under Consideration:

Amend NIST Handbook 44, Vehicle-Tank Meters Code as follows:

S.3.1. Diversion of Measured Liquid. – No means shall be provided by which any measured liquid can be diverted from the measuring chamber of the meter or the discharge line thereof. However, two or more delivery outlets may be installed if means are provided to ensure that:

- (a) liquid can flow from only one such outlet at one time; and
- (b) the direction of flow for which the mechanism may be set at any time is definitely and conspicuously indicated.

This paragraph does not apply to the following:

- (1) Equipment used exclusively for fueling aircraft.
- (2) Multiple-product, single-discharge hose metering systems that are equipped with systems designed to flush the discharge hose, provided the flushing system complies with the provisions of paragraph S.3.1.1. Means for Clearing the Discharge Hose, **Multiple-Product, Single-Discharge Hose Metering Systems.**

(Amended 2018 **and 20XX**)

S.3.1.1. Means for Clearing the Discharge Hose, Multiple-Product, Single-Discharge Hose Metering Systems. - **Multiple-product, single-discharge hose** Metering systems may be equipped with systems specifically designed to facilitate clearing of the discharge hose prior to delivery to avoid product contamination. In such systems, a valve to temporarily divert product from the measuring chamber of the meter to a storage tank, shall be installed only if all the following are met:

- (a) the discharge hose remains of the wet-hose type;
- (b) the valve and associated piping are approved by the weights and measures authority having jurisdiction over the device prior to commercial use;
- (c) the valve is permanently marked with its purpose (e.g. flush valve);

- (d) the valve is installed in a conspicuous manner and as far from the hose reel as practical;
 - (e) the system clearly and automatically indicates the direction of product flow during operation of the flush system; and
 - (f) clear means, such as an indicator light or audible alarm, is used to identify when the valve is in *use on both quantity indications and any associated recorded representations (e.g., using such terms as “flushing mode” or “not for commercial use”);*
[nonretroactive as of January 1, 2024.]
 - (g) effective, automatic means shall be provided to prevent passage of liquid through any such flush system during normal operation of the measuring system; and
[Nonretroactive as of January 1, 2024.]
 - (h) no hoses or piping are connected to the inlet when it is not in use.
- (Added 2018) **(Amended 20XX)**

UR.2.6. Clearing the Discharge Hose.

UR.2.6.1. Clearing the Discharge Hose, General. – A manifold flush or similar system designed to accommodate the flushing of product on single-hose, multiple-product systems is not to be used during a commercial transaction. The following restrictions apply:

- (a) The inlet valves for the system are not to be connected to any hose or piping (dust covers are permitted) when not in use.
- (b) When the flushing system is in operation, the discharge hose is only to be connected to the port for the product type being flushed from the discharge line.
- (c) Following the flushing process, indications and recording elements must be reset to zero prior to beginning a commercial delivery.
(Added 20XX)

UR.2.6.12. Records. Whenever, prior to delivery, a different product is pumped through the discharge hose to avoid contamination, a record including the date, time, original product, new product, and gallons pumped shall be maintained. These records shall be kept for a period of 12 months and available for inspection by the weights and measures authority.

(Added 2018)

Background/Discussion:

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Mr. Jim Willis
New York Department of Agriculture and Markets
(518) 485-8377, james.willis@agriculture.ny.gov

This item was one of two separate parts of VTM-1 (previously VTM-1A and VTM-1B) considered by the Committee at the 2018 NCWM Annual Meeting. The item voted on at the 2018 Annual Meeting, VTM-1A was adopted and VTM-1B was assigned an Informational status and carried-over to the next cycle.

Manifold flush systems are typically used on VTM’s with multiple compartments, delivering multiple products through a single hose. The purpose of the system is to allow the driver a means of clearing the hose of product prior to delivery (e.g., clearing the hose of diesel fuel before delivering clear kerosene). These types of systems are often

marketed as a safety feature in that it eliminates the need for the driver to climb on top of the truck to clear the hose. Such systems are also useful in helping avoid cross-contamination. Typically, the driver attaches the nozzle to the manifold and pumps product back into the supply tank via the manifold until the previous product is flushed from the hose. There is often a sight gauge which allows the driver to tell when the product is flushed.

The obvious concern is that this makes it very easy for the driver to circulate product through the meter prior to delivery, which goes against S.3.1. It should be noted that it also goes against S.3.1. when the driver climbs on top of the tanker and clears the hose. The submitter has voiced concerns involving the safety of this practice noting that the operator could be subject to falls from the tanker. The distance between the flush system and the hose reel is also a factor in how easy it is for the driver to facilitate fraud.

Manifold flush systems are available from OEMs and can be found in various catalogs. Looking on multiple websites, these systems are being installed across the country and for some manufacturers seem to be standard equipment for new trucks. The submitter of VTM-1 has also seen these systems installed on trucks that are for sale where the seller notes the system as a selling point. He can foresee these systems being mandated in the future as a safety requirement and would like W&Ms to have a clear policy before that happens.

Another concern is with systems fabricated onsite. These systems are often difficult to distinguish and installed in an inconspicuous manner. While the submitter of VTM-1 has ordered many of these systems out-of-service until repaired, it can be frustrating for the owner because the truck was used in another state for years and approved by weights and measures jurisdiction in the other state. This lack of uniformity is problematic for both officials and private industry.

At the 2018 NCWM Annual Meeting, the Committee heard comments from NIST OWM that this item needed additional work to address concerns that had been identified in OWM's 2018 Interim Meeting (and earlier) analyses. While there are clear benefits to improving safety when flushing hoses, NIST OWM and others have noted these systems can facilitate fraud without appropriate safeguards in place. NIST OWM noted the language in the Item Under Consideration in the Committee's 2018 Interim Report would:

1. provide an (unintentional) exemption to the provisions for "diversion of product" for *all* single meter, multiple product, multiple compartment systems;
2. would (unintentionally) require all such systems to be equipped with a manifold flush system;
3. fail to include requirements for the system to clearly indicate (on both display and recorded representations) when the flush system is in operation; and
4. fail to include limitations on how the user is permitted to appropriately use these systems.

In discussing the changes, NIST OWM felt were needed prior to the Annual Meeting, the submitter and OWM agreed that some of OWM's proposed changes would be considered editorial and others technical in nature. Since other than editorial changes could affect the Voting status of the item, OWM offered the following two courses of action for the Committee to consider:

1. Downgrade the item to Informational to allow time to address all the changes that are needed; or
2. Split the item into two parts to allow the portion of the item needing only editorial changes to move forward for vote; and carryover the remaining portion to allow time for it to be further developed and considered during the next NCWM cycle.

Rather than hold up the entire item to be considered in the next Conference cycle, the submitter requested the item be split into two parts to allow the completed portion, including the editorial changes, to move forward for vote.

At the 2019 NCWM Interim Meeting, the Committee heard comments to Agenda Item VTM-1 as well as position statements from MMA that they objected to manifold flush systems. NIST OWM provided an analysis to the

Committee prior to the Interim Meeting. The comments heard during open hearings and/or received prior to the Interim meeting are summarized below:

Mr. Hal Prince (Florida) stated that it was missing any inclusion for limitation of use, such as when delivering multiple products. Mr. Prince suggested that the Committee consider language forwarded by the SWMA in its 2018 Annual Report. Mr. Prince also suggested that the item be kept developmental. Mr. Dan Murray (Murray Equipment, Total Controls System) stated that Manifold Flush Systems were a big problem in Europe where they are permitted. Mr. Murray suggested these systems could facilitate fraud and NTEP should carefully consider this before granting approval. These systems should also be sealed. Mr. Murray's opinion was that the item should be withdrawn. Mr. Dmitri Karimov speaking on behalf of Meter Manufacturers Association, stated that MMA objected to manifold flush systems.

NIST OWM agreed with the WWMA and the CWMA that this item is fully developed and agreed with assigning it a voting status. OWM provided the following review of the operation of the equipment, proposed changes, and additional points to consider:

- At the 2018 NCWM Annual Meeting the Conference voted to allow an exemption to S.3.1. for Manifold Flush Systems, which is currently in the 2019 NIST HB 44 VTM code.
- S.3.1. states “no means” shall be provided to divert liquid from the measuring chamber of the meter or the discharge line.
- A manifold flush system allows liquid to be diverted from the discharge line on single hose multi-compartment VTMs so that liquid of one product is not mixed with liquid of another in the discharge line.
- Without a manifold flush system, the operator must manually return the product to the correct compartment to clear the discharge line before using another product.
- There are safety hazards with manually returning the product to storage (operator climbing on top of tank and lifting hose to return the product). There are also safety concerns when not properly clearing the discharge lines prior to delivering a different product and because of these safety concerns it was reported that more of these systems will likely be installed on single hose multicompartment trucks.
- Although safety is a high priority, the “means” used to return product back to storage is not as visible and makes facilitation of fraud a high possibility.
- The additional changes proposed are intended to ensure such systems are designed such that they do not facilitate fraud; help ensure owners understand their responsibilities when installing such a system; and ensure uniformity in enforcement though out the country.
- The changes reflect the suggested language from OWM's previous analysis and incorporate comments received from the MMA and others during the 2018 Annual meeting.

Nonretroactive dates may need to be added to allow time for manufacturers of flush systems to incorporate the safeguards into their systems. During the Committee's work session, the Committee considered the comments received during the NCWM Interim Meeting Open Hearings and recommended a Voting Status for this item.

At the 2019 NCWM Annual Meeting, the Committee supported amendments proposed to subparts (f) and (g) based upon statements from the submitter (New York) indicating that manufacturers of manifold flush systems will need additional time to incorporate the safeguards into their systems. The Committee also agreed to place the item on the voting consent calendar as amended, and as shown in the Item Under Consideration.

During the open hearing sessions, the Committee heard comments from Mrs. Tina Butcher (NIST OWM) offering a revision of S.3.1.1.(f). suggesting this portion be split into separate bullet points. Also heard were comments from

Mr. Jim Willis (New York) in support of NIST OWM's suggestion and his recommendation for making this a nonretroactive requirement to allow manufacturers time to accommodate the necessary changes.

During the voting session, it was requested this item be removed from the voting consent calendar and voted on separately. The item failed to receive enough votes for adoption and was therefore returned to the Committee.

During the 2020 NCWM Interim Meeting Open Hearings the Committee heard from Mrs. Butcher who recommended that VTM-18.1 and VTM-20.1 be combined because both items address manifold flush systems but VTM 18-1 does not restrict the use of the system to certain products and VTM 20-1 restricts the use of the system to home heating fuel. Mrs. Butcher recommended that the combined item be given a developing status to address the design and use of these systems adequately. Mrs. Butcher also recommended improvements to VTM 18-1 and VTM 20-1.

Mr. Karimov, speaking on behalf of the MMA, agreed with the language proposed in VTM 18-1 and acknowledged that there is value in the alternative proposal VTM-20.1 and supports combining both proposals into one. Mr. Prince also agreed that Item VTM-18.1 and VTM-20.1 be combined and given a developing status. Mr. Prince expressed a willingness to work with submitters to further develop the items and noted that he has concerns with cross-contamination caused by these systems. Mr. Jim Willis agreed with Mrs. Butcher's statements. Mr. Karimov stated that including more categories for types of fuels in the proposal is important such as flammable, explosive, etc. Mr. John Hathaway (Murray Equipment) submitter of VTM-20.1 expressed interest in working together with the submitters of VTM-18.1.

During the Committee's work session, the Committee agreed that this item, VTM-18.1 should be combined with VTM-20.1 and be given a Developing Status to allow the submitters of both items to work together towards resolving the conflicts in these two items.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items, this item included, were addressed in the subsequent 2021 NCWM Interim Meeting.

During the 2021 NCWM Interim Meeting Open Hearings, the Committee heard from Mr. Mike Smith (New York), who supports VTM 18.1 as a Developing item and he agreed to work with the other submitters of this item on paragraphs S.3.1.1. (f) and (g) and to address contamination. Mr. Prince supports a Developing status for VTM-18.1 and noted that with VTM-18.1 there will be issues with fuel contamination. The concern raised in previous discussions was that if these manifold systems are used with multi-product, single discharge hose dispensers for the delivery of both motor fuels and home heating fuels, a small amount of home heating fuel mixed with a motor fuel could be problematic. It was also noted that these fuels could get contaminated repeatedly whenever there is a change from one fuel to another and that there is also the safety issue of flashing when mixing a gasoline with diesel or kerosene. Ms. Diane Lee (NIST OWM) reported that VTM-18.1 and VTM-20.1 conflict. VTM-20.1 restricts the use of these systems to be used with only home heating fuels. Mr. Karimov, speaking on behalf of the MMA, noted if VTM-18.1 is adopted then VTM-20.1 would not be required. Mr. Charles Stutesman (Kansas) was not sure if VTM-18-1 and VTM-20-1 were being discussed together and it was pointed out that it was agreed that they be combined at the 2020 interim meeting. Mr. Hathaway agreed with a Developing status for this item and noted that the changes to Paragraphs (f) and (g) would help to address some of the issues that were raised.

During the Committee's work session, the Committee agreed to a Developing status for VTM-18.1 and to Withdraw VTM-20.1. The Committee also stated that any concerns with contamination and safety should also be addressed.

During the 2021 NCWM Annual Meeting open hearings, Mr. Willis noted that there were no updates to the item and was unable to follow-up due to the pandemic. Mr. Willis agreed with the Developing status for this item. NIST OWM Analysis included written comments on the item.

During the Committee's work session, the Committee agreed to keep a Developing status for this item.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, there were no comments during open hearings on this item.

The Committee agrees that the item has merit and this item failed to be adopted when voted upon during the 2019 NCWM Annual Meeting. The Committee agreed that the item should be given a Developing status and that the submitters work together to further develop the proposal considering the statements made by NIST OWM during the 2019 NCWM Annual Meeting Open Hearing and the amendments that were presented at that time.

At the SWMA 2019 Annual Meeting, Mr. Prince stated that this item muddies the waters and will cause the unacceptable cross contamination of engine fuels.

At the NEWMA 2019 Interim Meeting, the Committee and the body agree that this item be moved to Voting status but with some changes to language. The Committee believes that the item in its current form will place undue burden on the industry as it already uses manifold flush systems and retrofitting them will be costly. The following language is proposed:

- (i) clear means, such as an indicator light or audible alarm, is used to identify when the valve is in use on both quantity indications and any associated recorded representations (e.g., using such terms as “flushing mode” or “not for commercial use”);

[Nonretroactive as of January 1, 2022 2024 to become retroactive January 1, 2025]

- (j) effective, automatic means shall be provided to prevent passage of liquid through any such flush system during normal operation of the measuring system; and
[Nonretroactive as of January 1, 2022 2024 to become retroactive January 1, 2025]

During open hearings, submitters Mr. Willis and Mr. Steve Timar (New York) recommended removing retroactive dates and extend nonretroactive to 2024.

At the CWMA 2019 Interim Meeting, Mr. Stutesman commented that he supports the item with a developing status but is not sure about the requirements being retroactive and isn’t sure this will prevent fraud. We recommend Developing Status.

At the WWMA 2020 Annual Meeting, only voting and new items were reviewed during the meeting. This item was not reviewed.

The Committee recommends that this item move forward as a Developing Item, if the developers of VTM 18.1 and VTM 20.1 can combine their language to include an exception specifically for “Engine Fuels.”

At the SWMA 2020 Annual Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

Regarding the NEWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the NEWMA 2020 Interim Meeting, only voting items were reviewed at the meeting. This item was not reviewed.

Regarding the CWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the CWMA 2020 Interim Meeting, Mrs. Butcher requested that the Committee recommend this item remain a developing item. CWMA recommended a Developing status for this item.

At the NEWMA 2021 Annual Meeting, Mr. Willis commented that he is working with NIST and Murray Control Systems and expects to finalize the development of this item. Mrs. Butcher echoed Mr. Willis' comments and supported the efforts made to find language that is more widely supported. The NEWMA S&T Committee recommends that this item remain with Developing status.

At the CWMA 2021 Annual Meeting, no comments heard on this item. The CWMA S&T Committee recommends this item remain Developing.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

VTM-20.1 W S.3.1. Diversion of Measured Liquid.

(At the 2020 NCWM Interim Meeting the Committee agreed to combine VTM-20.1 with VTM-18.1. This item is now included with Agenda Item VTM-18.1. See the Appendix portion of this report for background information on this item.)

At the 2021 NCWM Interim Meeting the Committee agreed to withdraw this item, which the Committee combined with VTM-18.1 at the 2020 NCWM interim Meeting. See additional comments under VTM-18-1.)

VTM-20.2 V Table T.2. Tolerances for Vehicle Mounted Milk Meters.

(This item was returned to committee.)

(**Note:** The Item Under Consideration has been revised based on changes that were made by the Committee at the 2021 Interim Meeting. Additionally, this item was removed from the voting consent calendar at the 2021 NCWM Annual Meeting and voted on as an individual item. It did not receive enough votes to pass or fail and was returned to Committee for additional work.)

Source:

Poul Tarp AS

Purpose:

Change tolerances to accommodate more efficient milk-metering systems.

Item Under Consideration:

Amend NIST Handbook 44, Vehicle-Tank Meters Code as follows:

Table 2. Tolerances for Vehicle-Mounted Milk Meters		
Indication (gallons)	Maintenance Tolerance (gallons)	Acceptance Tolerance (gallons)
100 Complete Measuring System	0.5 0.5%	0.3 0.5%
200 Meter Only	0.7 0.3%	0.4 0.3%
300	0.9	0.5
400	1.1	0.6
500	1.3	0.7
Over 500	Add 0.002 gallon per indicated gallon over 500	Add 0.001 gallon per indicated gallon over 500

(Added 1989) (Amended 20XX)

Background/Discussion:

A Milk Meter Tolerance Task Group was formed and assigned to this item. Please contact the task group chair for more information:

Mr. Charlie Stutesman
 Kansas Department of Agriculture
 (785) 564-6681, charles.stutesman@ks.gov

Existing tolerances are based on the accuracy of the Flow meter itself. The proposed Tolerances are based on Milk Metering Systems where the magnetic flow meter is a part of the Milk Metering system handling milk containing air.

The accuracy of the Flow meter will always be influenced by the way it is used. The only way you can obtain the accuracy described by the manufacturer is when the flow meter is operating as a “stand alone” unit and, equally important, only if the product passing through the flow meter is complete air-free.

The submitter provided the following:

During the past 20 years, the need for improved efficiency in the collection of milk has resulted in the use of milk pumping equipment being installed on milk tankers.

One of the most obvious places for a modern Dairy to optimize is the amount of time that the milk tanker uses to make a collection. If you can reduce the collection time at each farmer, the Dairy will be able to get a significant reduction in collection and transport cost for the benefit of the Farmer, Consumer and the Dairy itself. At the same time, you will get an environmental benefit as a result of reduced CO₂ in the milk collection process.

The consequence of introducing pump systems on milk tankers is that it causes air to be mixed with the milk which again will influence the accuracy of the magnetic flow meter mounted in the system. Milk entrains air unlike petroleum liquids which do not. As you know, the flow meter will count anything that passes through the meter – liquid as well as air – and it is therefore essential that as much air as possible is removed from the milk before it reaches the flow meter. However, it is widely recognized that it is not possible to remove all the air from the milk, which will result in an inaccuracy.

It is therefore essential that the tolerances for vehicle mounted milk pump systems using magnetic flow-meters for determining milk volume reflects today’s way of collecting milk. This means that existing Tolerance for milk meters cannot be used when the milk meter is a part of a system where different system parts will influence the accuracy of the count. Such milk metering systems will need to be classified with their own tolerances.

Based on our 25 years of experience as a manufacturer of these systems and more than 3000 installations on milk trucks operating in more than 15 countries, we would like to propose that the Tolerance for Vehicle Mounted Milk Metering Systems is changed from 0.3 % to 0.5 % and that the tolerances will be listed and classified separately and not be associated with products from the oil industry. Our proposal is consistent with Weights & Measures tolerances accepted around the world.

We hope that the NCWM will consider our proposal and we will be more than happy to meet with you and answer any questions you may have. We believe that a change of Tolerance is necessary in order for the NIST Handbook 44 to reflect today's milk collection and the technical progress within milk collection.

Yours sincerely,

Poul Tarp
President POUL TARP A/S

The POUL TARP milk pump system holds an MID approval which is recognized and in accordance with guidelines and standards described in the OIML – International Organization of Legal Metrology.

DANAK
PROD Reg nr. 7025

FORCE Certification

EC-Type Examination Certificate
Measuring Instrument Directive

Certificate number: DK-0200-MI005-006
Issued by FORCE Certification, Denmark
EC-notified body number 0200

In accordance with the Directive 2004/22/EC of the European Parliament and Council of March 31st, 2004 on measuring instruments (MID) with later amendments.

Issued to: Ingeniørfirmaet Poul Tarp A/S
Jomfruløkken 4
DK - 8930 Randers NØ
Denmark

Reference No.: 115-24938

Type of instrument: Milk Measuring System on road tankers (or stationary)

Type designation: PT LVMS - Poul Tarp Liquid Volume Measuring System

Type variants: type 2, type 3 and type 4

Valid until: August 10, 2025

Number of pages: 38 including appendix

Date of issue: August 10, 2015

DANAK
PROD Reg nr. 7025

FORCE Certification

Appendix to
EC-Type Examination Certificate
Measuring Instrument Directive

Number: DK-0200-MI005-006
Issued by FORCE Certification, Denmark
EC-notified body number 0200

Revision	Issue date	Changes
DK-0200-MI005-006	09-01-2015	First issue
DK-0200-MI005-006	10-08-2015	Second issue

The measuring system has the following characteristics

Accuracy class	0.5
Mechanical class	M3
Electromagnetic class	E3
Climatic class	Condensing/open location, H3
Ambient temperature	-25 / +55 °C
Liquid temperature	0 / +50 °C
Liquid pressure max	1 bar
Liquid types	Milk (Raw milk)
Liquid density	1,035 Kg/L at 5 °C +/- 0,02 Kg/L
Liquid conductivity	≥ 5 µS/cm

Flow characteristics for Measuring System, including Minimum Measured Quantity (MMQ), depends on actual flow sensor Proces Data 340 series in combination with Gas Elimination Device (GED) used:

DANAK
PROD Reg nr. 7025

FORCE Certification

DK-0200-MI005-006

Applied documents

Recommendations	Guides
OIML R117 (1995)	WELMEC Guide 10.5 Marking of fuel dispensers (2006)
OIML R117-1 (2007)	WELMEC Guide 10.6 Sealing of fuel dispensers (2008)
OIML D11 (2004)	
OIML R117-2 Annex – E (CD2)	

Applied Evaluation Certificates belonging to this Type Examination Certificate:

- Evaluation Certificate Force Certification No. 115-24938.05, issued 10.08.2015
- Evaluation Certificate and Description NMI no. TC7204 rev 6, issued 26 august 2014
- Documentation folder NMI no. TC7204-4

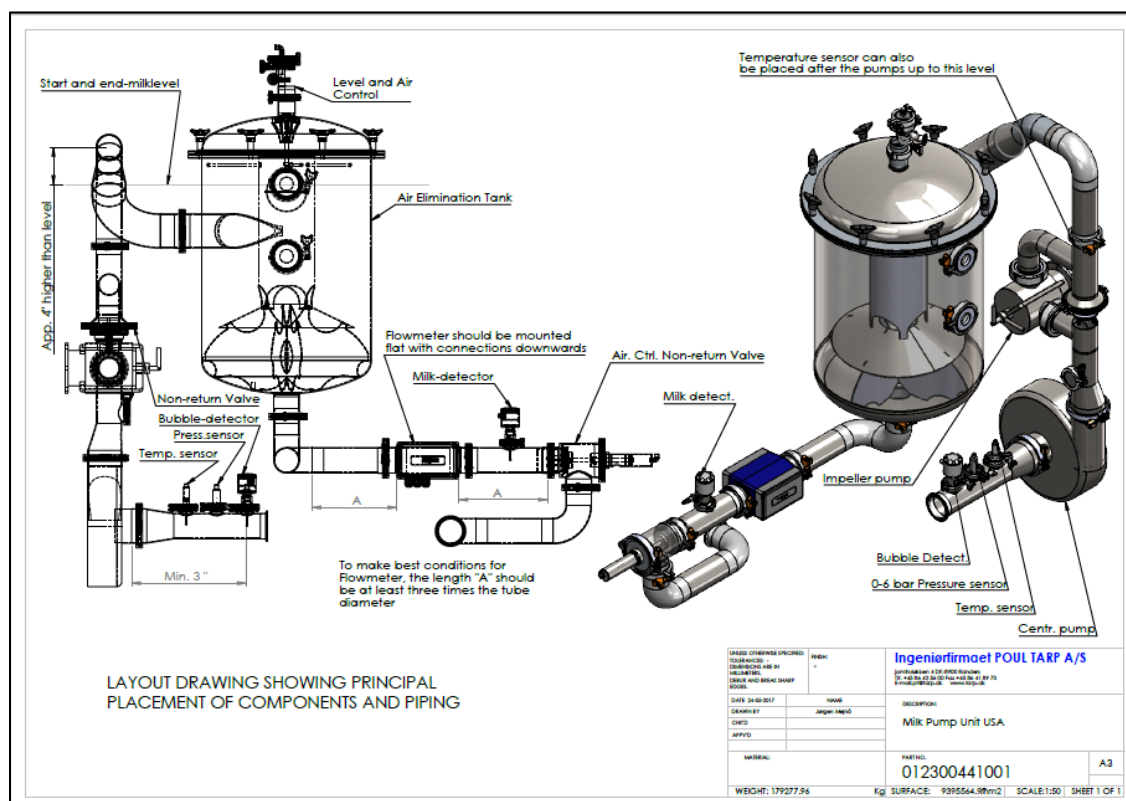
Technical documentation
Reference no.: 114-30557.

Inlet (mm)
51
63,5
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102

at 5 (5:1) within
minimation

Page 2 of 38

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During the 2020 NCWM Interim Meeting Open Hearings the Committee heard from Mr. Carey McMahon (Poul Tarp) who provided a presentation on his company's VTM milk metering system advocating for expanding tolerances for these systems.

Ms. Leigh Hamilton (Piper) provided a presentation concerning the piper system and stated in her presentation that piper currently has an approved NTEP certificate for their device that is in service in the U.S. Ms. Leigh opposes this item to increase the tolerances for milk meters and noted in her presentation that there may not be a need to increase the tolerances in order to move forward in allowing innovation in milk measurements.

Mr. Charlie Stutesman (Kansas) provided a presentation on research that Kansas Dept. of Agri. has done on the history of three NIST HB 44 Codes (3.31. VTMs, 3.35. Milk Meters, and 4.42. Farm Milk Tanks) and the issue of Piper's NTEP Certificate. Mr. Stutesman discussed complications involved in measurement of product using various methods and potential short comings of Piper's NTEP Certificate.

Mr. Doug Musick (Kansas) stated that he does not believe there is enough information presented to change existing tolerances and noted that the Piper system was only evaluated for accuracy up to a measurement of 300 gallons. Mr. Musick also noted that he believes that Piper's certificate should be amended to qualify the system for draft sizes up to 300 gallons. Mr. Micheal Keilty (Endress + Hauser) commented that he had concerns with Piper's certificate. Ms. Hamilton noted that Piper followed guidelines as provided during the NTEP evaluation. Ms. Diane Lee (NIST OWM) stated that the Committee may want to consider a developing status for this item and that more information is needed concerning air elimination methods for milk metering systems.

A representative from the Dairy Farmers of America, stated that they oppose the increase in tolerance but support the use of VTM metering systems. Mr. McMahon pointed out that the Poul Tarp system can be accurate for any size measurement, but the beginning and end of the measurement would not be accurate measures (i.e., within NIST HB 44 tolerances) due to entrained air in the product when the flow is not uniform. Mr. Dmitri Karimov (MMA) stated that the proposal should be further developed and pointed out that due to the tolerance structure becoming more stringent as the volume of the measurement increases, the acceptance tolerance at 500 gallons is unreasonable. Mr. Hal Prince (Florida) stated that he does not agree with expanding the tolerances. Mr. Prince believes that air elimination should be the focus and that the proposal should be assigned to a task group. Mrs. Tina Butcher (NIST OWM) noted that testing should be performed using multiple quantities and flowrates. Mr. Stutesman pointed out that confusion is generated by multiple NIST HB 44 codes addressing the measurement of milk and that the proposal should be assigned to a TG to sort this out. Mr. Stutesman also pointed out there are no requirements in NIST HB 44 for air elimination pertaining to milk metering in these codes. Mrs. Butcher noted that the current NIST HB 44 requirements may not be flexible enough for this new technology and that the existing codes may need to be reviewed and updated.

Ms. Hamilton stated that this is not simply a consideration of only a change in tolerances. There are other requirements (currently in the OIML standard) that should also be considered in making any changes to the existing NIST HB 44 requirements. Mr. Keilty stated that air elimination is a difficult problem to mitigate and noted that he is not sure if it is necessary to expand the existing tolerances or make other amendments. Mr. McMahon stated that using the existing NIST HB 44 tolerances in the VTM Code, at a draft of 5000 gallons, the tolerance value is highly unreasonable. Kansas noted that the type evaluation performed on the Piper system was limited to a draft of 300 gallons. If evaluation had included other draft sizes, the Piper system may have failed the testing.

Mr. Ken Ramsburg (Maryland) stated that the proposal should be given a developing status. Mr. Ramsburg agreed that there are no existing requirements for this type of system addressing air elimination and stated that the flow meter, air eliminator, plumbing, and pumps all need to be considered during evaluation and the evaluation should be conducted on the system.

Mr. Tim Chesser (Arkansas) questioned whether the flow meter used in the system is appropriate and noted that there are many unanswered questions surrounding this issue. Mr. Jim Willis (New York) recommended a developing status for this item. Mr. Kevin Schnepf (California) stated that although he is opposed to relaxing existing tolerances, he supports the development of this proposal by an assigned task group.

During the Committee's work session, the Committee agreed that this item has merit and should be given an Assigned status. The charge to the assigned task group will be to address three NIST HB 44 codes (VTM, Farm Milk Tanks and Milk meters) to review the requirements and tolerances found in these codes and assess the need for changes.

During the 2021 NCWM Interim Meeting The submitter has received credible complaints regarding the way the hose Open Hearings, the Committee heard from Milk Meter TG Chair Stutesman who gave an update on the TG activities. Mr. Stutesman reported that the Milk Meter TG worked via email communication to review and discuss the proposed Milk Meter Tolerances in Agenda Item VTM-20.2. The Milk Meter TG discussed the tolerances that are included in NIST HB 44 for Milk meters in various parts of NIST HB 44 which include the VTM, Section 3.31, Farm Milk Tanks, Section 4.42., Mass Flow Meters, Section 3.37, and Milk Meters, Section 3.35. Mr. Stutesman also reported that the TG reviewed OIML tolerances for milk meters. Mr. Stutesman stated that after a review of the various tolerances, the TG agreed that the OIML tolerances provide tolerances that encompassed the system of measuring milk and not just a tolerance for the performance of the meter. The TG agreed with proposing the use of the OIML milk meter tolerance as the milk meter tolerances in the VTM code. Mr. Stutesman provided a copy of the proposed changes to VTM-20.2. The proposed tolerances will align the tolerances in the VTM Code for Milk Meters with OIML Milk Meter Tolerances. Mr. Stutesman requested that this item move forward as a Voting item. The Committee also heard from Mr. Clark Cooney (California) who noted that he supported the items as Developing because one company mentioned meeting the existing tolerances. It was mentioned that the company's testing was only performed over a limited range of volumes.

During the Committee's work session, the Committee agreed with the proposal from the Milk Meter TG to adopt OIML tolerances for milk meters in the VTM code, that this item be given a voting status, and that the item under consideration be replaced with the work group's proposal to adopt OIML tolerances. The Committee also agreed with expanding the Task Group to address other milk meter codes in NIST HB 44. The Item under Consideration above provide the tolerances agreed to by the Milk Meter TG and that align with OIML tolerances.

During the 2021 Annual Meeting, Open Hearings, Mr. Stutesman provided an update on the milk meter task group activities. Mr. Stutesman noted that there was a field trip to observe milk metering systems. He noted that the proposed tolerances will align the milk tolerances with the OIML tolerances for milk meters and Mr. Stutesman noted that the OIML tolerances provides one tolerance for the meter and another tolerance for a milk metering system. Mr. Stutesman also noted that it may be impractical to perform an air eliminator test on these devices due to comingling of product.

During the committees work session, the Committee agreed to a Voting Status for this item and added it to its voting consent calendar.

During the voting session, Mr. Stutesman proposed an amendment to add a non-retroactive date to the proposed tolerances. It was questioned during the discussion that if a non-retroactive date was added to the tolerances, what tolerances would apply to existing meters that had been manufactured and tested prior to the non-retroactive date? One of the concerns expressed with having a new tolerance table without a non-retroactive date was whether or not existing devices would be required to be reevaluated by NTEP. The voting membership of the NCWM voted against adding the non-retroactive requirement to the proposed tolerance table. The Item Under Consideration was then presented for vote and failed to receive enough votes to pass or fail and was returned to the Committee for additional work.

Note: For reference, the Item under Consideration that was included in the 2021 NCWM Interim Meeting Agenda is provided below:

Table 2. Tolerances for Vehicle-Mounted Milk Meters		
Indication (gallons)	Maintenance Tolerance (gallons)	Acceptance Tolerance (gallons)
100	0.5 <u>0.6</u>	0.3 <u>0.5</u>
200	0.7 <u>1.2</u>	0.4 <u>1.0</u>
300	0.9 <u>1.8</u>	0.5 <u>1.5</u>
400	1.1 <u>2.4</u>	0.6 <u>2.0</u>
500	1.3 <u>3.0</u>	0.7 <u>2.5</u>
Over 500	Add 0.002 <u>0.006</u> gallons per indicated gallon over 500	Add 0.001 <u>0.005</u> gallons per indicated gallon over 500

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2019 WWMA Annual Meeting, this proposal was not addressed by the WWMA.

At the 2019 SWMA Annual Meeting, this proposal was not addressed by the SWMA.

At the 2019 NEWMA Interim Meeting, this proposal was not addressed by NEWMA.

At the 2019 CWMA Interim Meeting, Mr. Stutesman commented that there are no active NTEP Certificates of Conformance for these types of meters. Several regulators commented that they would like this to move forward as developing to, possibly, allow for innovation in the way milk is measured. We recommend developing status for this item.

At the 2020 WWMA Annual Meeting, only voting and new items were reviewed during the meeting, therefore this item was not reviewed.

At the 2020 SWMA Annual Meeting, only voting and new items were reviewed during the meeting. This item was not reviewed by the SWMA.

The 2020 NEWMA Annual Meeting was not held due to the COVID-19 pandemic.

At the 2020 NEWMA Interim Meeting only voting and new items were reviewed during the meeting. This item was not reviewed by NEWMA.

At the 2020 CWMA Interim Meeting, Milk Meter Tolerance TG Chair updated the Committee that the TG was hard at work on this item. The CWMA recommended an Assigned status for this item.

At the 2021 NEWMA Annual Meeting, multiple comments were received in support of this item with a Voting status. Ms. Lee is a member of the milk meter task group and the task group recommends tolerances used in OIML. Mr. Willis, also member of the task group, asks to expand the scope of the task group to assess all three codes in the Handbook where milk meters are found. The NEWMA S&T Committee recommends that this item move forward with Voting status.

At the 2021 CWMA Annual Meeting, the Chair of the S&T Committee reported that this item appeared in CWMA Pub 16 as an assigned item incorrectly and should have been presented as a voting item. NCWM has verified that this is the case. Mr. Stutesman, Chair of the Milk Meter Tolerance Task Group, reported that the task group is moving forward with a proposal to align NIST Handbook 44 tolerances with OIML tolerances. The task group has made a formal request to the Chairman of the NCWM S&T Committee to expand the scope of the task group and is awaiting final decision on that request. Mr. Stutesman reported that the current NIST HB 44 tolerances may be beyond the manufacturer's ability and may be in conflict with Fundamental Considerations. The CWMA S&T Committee recommends that this item moves forward as a Voting item.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

LPG - LPG and Anhydrous Ammonia Liquid-Measuring Devices

LPG-20.1 V S.2.5. Zero-Set-Back Interlock and S.2.6. Automatic Timeout.

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert's Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

(The Item under Consideration reflects changes that were made by the Committee during its 2020 NCWM Annual Meeting work session. The timeout in paragraph S.2.6.2 was changed from two minutes to three minutes and editorial changes were made to wording and changes were made to the nonretroactive, renumbered, added and amended dates.)

Source:

NIST OWM

Purpose:

Reformat the requirements for zero-set-back interlock and time-out features for clarity and consistency in the LPG code to align the format with other measuring devices codes.

Item Under Consideration:

Amend NIST Handbook 44, Liquid Petroleum Gas and Anhydrous Ammonia Liquid-Measuring Devices Code as follows:

S.2.5. ~~Zero-Set-Back Interlock, Stationary and Vehicle Mounted Meters, Electronic.~~

S.2.5.1. Zero-Set-Back Interlock, Electronic Stationary Meters (Other than Stationary Retail Motor-Fuel Dispensers) and Electronic Vehicle-Mounted Meters, Electronic. - A device shall be ~~so~~ constructed so that after an individual delivery or multiple deliveries at one location have been completed, an automatic interlock system shall engage to prevent a subsequent delivery until the indicating element and, if equipped, recording element have been returned to their zero position. ~~For individual deliveries, if there is no product flow for two minutes the transaction must be completed before additional product flow is allowed. The 2-minute timeout shall be a scalable feature on an indicator.~~

[Nonretroactive as of 2021]

(Added 2019) **(Renumbered and Amended 2020 2021)**

S.2.6.2. Zero-Set-Back Interlock for Stationary Retail Motor-Fuel Devices. – A device shall be constructed so that:

- (a) after a delivery cycle has been completed by moving the starting lever to any position that shuts off the device, an automatic interlock prevents a subsequent delivery until the indicating elements and recording elements, if the device is equipped and activated to record, have been returned to their zero positions;
- (b) the discharge nozzle cannot be returned to its designed hanging position (that is, any position where the tip of the nozzle is placed in its designed receptacle and the lock can be inserted) until the starting lever is in its designed shut-off position and the zero-set-back interlock has been engaged; and
- (c) in a system with more than one dispenser supplied by a single pump, an effective automatic control valve in each dispenser prevents product from being delivered until the indicating elements on that dispenser are in a correct zero position.

[Nonretroactive as of January 1, 2017]

(Added 2016) **(Amended 2021)**

S.2.6. Automatic Timeout.

S.2.6.1. Electronic Stationary (Other than Stationary Retail Motor-Fuel Dispensers) and Electronic Vehicle-Mounted Meters. ~~Electronic.~~ – For individual deliveries, if there is no product flow for three minutes the transaction must be completed before additional product flow is allowed. The three minute timeout shall be a sealable feature on an indicator.

[Nonretroactive as of 2021]

(Added 2021)

S.2.6.2. Automatic Timeout Pay-at-Pump Retail Motor-Fuel Devices. – Once a device has been authorized, it must de-authorize within three minutes if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than ~~two~~ three minutes.

[Nonretroactive as of 2021]

(Added 2021)

Background/Discussion:

Similar metering technology is in use in corresponding stationary, vehicle-mounted, and vehicle refueling applications across multiple handbook measuring devices codes. In each case once the system is turned off no new delivery can be initiated until all indications are returned to zero. Additionally, in instances where deliveries do not commence within a specified period after a system is authorized, the system must automatically deauthorize the transaction. This proposal further clarifies LPG measuring devices code requirements for the zero-set-back interlock and automatic timeout features and aligns the operation of equipment across corresponding handbook codes.

This proposal is a follow-on to changes adopted to the LPG Code in July 2019 and is intended to reformat the requirements for zero-set-back interlock and time-out features for clarity and consistency in the LPG code to align the format with other measuring devices codes. OWM recommends the proposed changes to align the corresponding requirements for stationary retail motor-fuel dispensers (RMFDs) and other stationary devices and vehicle-mounted applications with those in Section 3.30. Liquid-Measuring Devices (LMD) and Section 3.31. Vehicle Tank Meters (VTM) Codes. Unlike the VTM Code and the LMD Code, the LPG & Anhydrous Ammonia (NH₃) Code addresses both vehicle-mounted and stationary devices. This proposal would address the zero-set-back interlock and timeout requirements in separate paragraphs.

NIST OWM noted that a paragraph was added to the LMD Code in 2016 to include a provision for an automatic timeout on “pay-at-pump” retail motor fuel dispensers where payment is rendered via a card at the dispenser. It was not until 2019 that a corresponding paragraph was made part of LPG code to address LPG retail motor-fuel dispensers. By modifying the LPG timeout requirements making them separately designated paragraphs (i.e., new S.2.6.1. and S.2.6.2.) the LPG code requirements will include clearer language that mirrors the corresponding LMD requirement for RMFDs.

NIST OWM acknowledges the 2019 comments from CWMA and SWMA expressing a preference for a two-minute time out rather than a three-minute time out to harmonize with other codes. NIST OWM has found that a time out limit of three minutes aligns with the current VTM Code while a two-minute time out limit aligns with the current LMD Code for stationary devices.

During the 2020 NCWM Interim Meeting Open Hearings, the Committee heard from Ms. Diane Lee (NIST OWM), who reported that this proposal is a follow-up to changes made to the LPG Code in 2019. Ms. Lee further stated that this will separate the interlock and timeout requirements in the LPG Code to better align with the LMD and VTM codes. Mr. Dmitri Karimov (MMA) supports this proposal as a voting item.

Mr. Charlie Stutesman (Kansas) supports this proposal as a voting item with any amendments to this requirement to match the automatic time-out requirements that are being considered in LMD-20.2. Mr. Brent Price (Gilbarco) supported this proposal as Voting item. Mr. Kevin Schnepp (California) supported this proposal as voting with the

changes recommended. Mr. Jim Willis (New York) supported this proposal as a Voting item with the recommended changes.

During the Committee's work session, the Committee agreed that this item should be assigned a Voting status.

During the Committee's 2020 Annual Meeting Open Hearings that was held as a virtual meeting in January 2021, the Committee heard comments in support of this item from Mr. Clark Cooney (California), and Mr. Karimov, speaking on behalf of the MMA. There was discussion that the language in Paragraph S.2.6.2 that designated a two-minute time out was not uniform with Agenda item LMD-20.2 paragraph S.1.6.10 which designated a three-minute time out and it was suggested that the two-minute timeout in Agenda Item LPG-20.1 paragraph S.2.6.2 be changed to three minutes.

During the Committee's 2020 Annual Meeting work session, the Committee agreed to change the Automatic Timeout in paragraph S.2.6.2 from two minutes to three minutes. Changes were also made to the nonretroactive, renumbered, added, and amended dates. The changes to S.2.6.2 are included below, and all changes made by the Committee to the proposal are reflected in the Item Under Consideration.

S.2.6.2. Automatic Timeout Pay-at-Pump Retail Motor-Fuel Devices. – Once a device has been authorized, it must de-authorize within ~~two~~ three minutes if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than ~~two~~ three minutes.

The Committee agreed that this item with its changes be forwarded as a Voting item to be ratified at the next NCWM in-person meeting.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, Mr. John Barton (NIST OWM) stated that this item is a follow-up item to changes that were adopted in the NCWM Annual Meeting in July 2019. It is intended to reformat requirements for zero-set back interlock in the LPG Code to align with requirements in the LMD and VTM Codes.

The Committee agrees with the proposal and recommends a Voting status.

At the WWMA 2020 Annual Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed by the WWMA.

At the SWMA 2019 Annual Meeting, Ms. Lee recommended the Committee harmonize the language in this item to align with the LMD Code in the handbook. After consideration of this item the Committee recommends this item be made a Voting Item with the term "two minutes" changed to "180 seconds" on lines 46 and 48 on page S&T 49.

At the NEWMA 2019 Interim Meeting, the Committee and the body agree that this item should be listed as voting but with a language change. The Committee believes that to be consistent with other timeout requirements, the term "two minutes" shall be changed to "180 seconds, on lines 46 and 48 on page S&T 50. During open hearings, Mr. Richard Suiter (Richard Suiter Consulting) commented that he would recommend a language change to 3 minutes. Mr. John McGuire (New Jersey) and Mr. Willis agreed with Mr. Suiter's comments.

Mr. Stutesman commented that he would like this item separated and that S.2.5. move forward as voting and S.2.6. move forward as developing until the length of the time out is sorted out. We recommend the item be separated and that S.2.5. move forward as voting and S.2.6. move forward as developing for these reasons.

At the SWMA 2020 Annual Meeting, only voting and new items were reviewed during their meeting therefore, this item was not reviewed by the SWMA.

Regarding the NEWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the NEWMA 2020 Interim Meeting, only voting and new items were reviewed during their meeting, therefore, this item was not reviewed by NEWMA.

Regarding the CWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the CWMA 2020 Interim Meeting, the only comments the S&T Committee heard during open hearings were an interest to keep language uniform in NIST Handbook 44. The CWMA S&T Committee recommends this item be amended as follows:

S.2.6.2. Automatic Timeout Pay-at-Pump Retail Motor-Fuel Devices. – Once a device has been authorized, it must de-authorize within two three minutes if not activated. Reauthorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than two three minutes.
[Nonretroactive as of 2021]
(Added 20XX)

We believe this item, as amended, is fully developed and recommend this item move forward as Voting.

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

WTR - Water Meters

WTR-20.1 V S.3.2. Meter size and Directional Flow Marking Information.

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert’s Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

(NOTE: The item under consideration reflects changes that were made by the Committee during its 2020 NCWM Annual Meeting work session. Section S.3.2. was changed from a retroactive requirement to a nonretroactive requirement with a nonretroactive date of 2022.)

Source:

California Department of Food and Agriculture, Division of Measurement Standards

Purpose:

Add marking requirements for meter size and water flow direction indication marking requirements.

Item Under Consideration:

Amend NIST Handbook 44, Water Meters Code as follows:

S.3.2. Meter Size and Directional Flow Marking Information. A water meter shall be clearly and indelibly marked with the following information:

(a) meter size on the indicator face plate; and

(b) water flow direction.

[Nonretroactive as of January 1, 2022]

(Added 2021)

Background/Discussion:

Meter size must be identified to select the suitable device for the application. (NIST HB 44 G-UR.1. Selection Requirements.) Water flow direction must be identified to help ensure the device is installed correctly. (NIST HB 44 G-UR.2. Installation Requirements.)

The proposed amendments, if adopted, would require additional marking and may impact manufacturing processes.

During the 2020 NCWM Interim Meeting Open Hearings the Committee heard from Mr. Kevin Schnepf (California) who recommended that the proposal be amended to delay enforcement and to add a nonretroactive date. Mrs. Tina Butcher (NIST OWM) stated that NIST OWM supports the requirement to mark the meter size and flow direction. Mrs. Butcher also requested that more information be acquired from manufacturers as to accomplish the marking such as stamping or casting in the meter housing.

Mr. Gallin Chen (Dune Laboratory, Inc.) requested that a range of meter sizes be accepted as a marking for meter size. Mr. Dmitri Karimov (MMA) agreed that the proposal has merit but noted that specifying cast or stamped marking is too restrictive.

A representative from Los Angeles, California, supported this proposal as a voting item. Mr. Charles Stutesman (Kansas) supported this item as a voting item.

During the Committee's work session, the Committee agreed that this item should be given a Voting status with an amendment to the language in part (b).

The following is the item, as amended, included on the S&T Committee Agenda as WTR-20.1 for consideration during the 2020 Annual Meeting:

S.3.2. Meter Size and Directional Flow Marking Information. A water meter shall be clearly and indelibly marked with the following information:

(a) meter size on the indicator face plate; and

(b) water flow direction.

Below is the item as presented during the S&T Committee Open Hearings at the 2020 Interim meeting:

S.3.2. Meter Size and Directional Flow Marking Information. A water meter shall be clearly and indelibly marked with the following information:

(a) meter size on the indicator face plate; and

(b) water flow direction designated by an arrow cast or stamped into the body of the meter.

During the 2020 NCWM Annual Meeting that was held in January 2021 the Committee heard comments from Mr. Matt Douglas (California) who was in support of this item. Mrs. Butcher supported the intent of the item and noted that paragraph S.3.1. that applies to all markings is non-retroactive, which may create confusion in the application of S.3.2. Consequently, the Committee may wish to consider modifying paragraph S.3.1. or making paragraph S.3.2. nonretroactive.

During the Committee’s work session, the Committee agreed that adopting this item as retroactive would create issues in the application of marking requirements for water meters. As such, the Committee agreed to amend the item to make it nonretroactive as shown in the Item Under Consideration above.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, the Committee agrees this item has merit and that it should be given a Voting status. During open hearing session, Mr. Clark Cooney (California) stated his support for the item.

At the SWMA 2019 Annual Meeting, no comments were heard on this item. The Committee decided not to make a recommendation.

At the NEWMA 2019 Interim Meeting, the Committee and the body agree that this item should be moved to Voting status. No comments were heard regarding negative aspects to the proposal.

At the CWMA 2019 Interim Meeting, Ms. Rachelle Miller (Wisconsin) supported this as a voting item. They recommended the item move forward as voting.

At the WWMA 2020 Annual Meeting, only voting and new items were reviewed during their meeting therefore, this item was not reviewed by the WWMA.

At the SWMA 2020 Annual Meeting, only voting and new items were reviewed during the meeting therefore this item was not reviewed.

Regarding the NEWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the NEWMA 2020 Interim Meeting, only voting and new items were reviewed during the meeting therefore this item was not reviewed.

Regarding the CWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the CWMA 2020 Interim Meeting, the S&T Committee heard no comments during open hearings on this item. We feel this item is fully developed and recommend this item move forward as a voting item.

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

WTR-20.2 V S.1.1.4. Advancement of Indicating and Recording Elements.

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert’s Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

Source:

County of San Diego Department of Agriculture

Purpose:

Clarify S.1.1.4. Advancement of Indicating and Recording Elements shall also be applicable to non-mechanical water meters.

Item Under Consideration:

Amend NIST Handbook 44, Water Meters Code as follows:

(The item under consideration includes changes recommended by the S&T Committee at the 2020 Interim Meeting.)

S.1.1.4. Advancement of Indicating and Recording Elements. – Primary indicating and recording elements shall ~~be susceptible to advancement~~ advance only by the ~~mechanical normal~~ designed operation of the device., as intended by the manufacturer.

(Amended 2020)

Background/Discussion:

Existing NTEP certified water meters function based on either a mechanical or a non-mechanical measuring element. Non-mechanical water meters do not contain moving parts that change position (rotate) proportional to water flow traversing the meter. Instead, these meters calculate and register volume based on non-invasive flow velocity measurements and other physical parameter determinations. Common non-mechanical water meter designs make use of the ultrasonic flow measuring principle, such as those conformed by NTEP CC no. 17-141 or 19-018. Future technologies are also expected to rely on other kinds of contactless flow measuring principle, e.g., electromagnetic induction.

To strict interpretation of current code language, ultrasonic and non-mechanical water meters would not be able to comply to S.1.1.4. The intent of this proposal is to harmonize this paragraph with existing language in similar codes such as 3.34. Cryogenic Liquid-Measuring Devices or 3.38. Carbon Dioxide Liquid-Measuring Devices, and to clarify the intent of the requirement is to apply not only to water meters that measure volume mechanically, but also to non-mechanical water meters.

During the 2020 NCWM Interim Meeting Open Hearings, Mr. Garrett Cooper (San Diego County, California) provided amendments to the language proposed under S.1.1.4. Mrs. Tina Butcher (NIST OWM) noted that the use of the term mechanical may be misinterpreted and recommends striking “Mechanical.” Mrs. Butcher also suggested that the language be reviewed with other NIST HB 44 codes for harmonization. Mr. Dmitri Karimov (MMA) agreed with the proposed changes to the language offered by Mr. Cooper of San Diego County, California. Mr. Kurt Floren (Los Angeles County, California) submitted additional changes to the language.

During the Committee’s work session, the Committee agreed that this item has merit and that the amendment offered by San Diego County was appropriate. The Committee agreed that this item should be given a Voting status.

During the Committee’s 2020 NCWM Annual Meeting Open Hearings that were held as a virtual meeting in January 2021, the Committee presented an amended version of the item which was different than the item in Publication 16. The Committee proposed the amended version because the language in Publication 16 seemed incomplete. The amended item presented by the Committee during the open hearings is as shown below:

S.1.1.4. Advancement of Indicating and Recording Elements. – Primary indicating and recording elements shall be susceptible to advancement only by the ~~mechanical~~ normal operation of the device.

(Amended 2021)

The Committee heard from Mr. Garrett Cooper (San Diego County, California) and Mr. Clark Cooney (California) who were in support of the NCWM Publication 16 version of the proposal. Mr. Dmitri Karimov (MMA) also commented that he leans to support the language in Publication 16.

During the Committee's work session, the Committee agreed to keep the language included in NCWM Publication 16 and forwarded it as a Voting item to be ratified at the next NCWM in-person meeting. The Committee also noted that "as" has been omitted between the phrase "device, as intended by the manufacturer" and should be added to the code either as an editorial change or through the submission of another Form 15, if the change is more than editorial, to make the item grammatically correct.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, Mr. Cooper stated that there are many non-mechanical meters in use that incorporate non-invasive technology and that the proposal should be expanded to include all meters. Mr. Kurt Floren (Los Angeles County, California) stated that he is not comfortable with the use of the term "normal" operation and suggests that there is a better means to define this. Mr. Floren suggested the description "as intended by the manufacturer" as a replacement. Mr. Cooney agrees and recommended a change to the use of "normal" operation.

The Committee agreed that the item has merit; however, there were some concerns about the use of the word "normal" in the proposal in reference to the operation of the device. The Committee agree this proposal should be assigned a Developing status. The Committee also recommends the submitter work with California DMS and Los Angeles County, California to wordsmith the terminology used in the proposal.

At the SWMA 2019 Annual Meeting, the Committee heard no comments on this item. The Committee decided to not make a recommendation.

At the NEWMA 2019 Interim Meeting, the Committee and the body agreed that this item be moved to a voting status, but with a language change. The Committee is concerned with the use of the term "normal". The language change suggested is "as intended by the manufacturer". During Open Hearings, Mr. Frank Greene (Connecticut) suggested replacing "normal" with another term as it is ambiguous. Mr. Jason Flint (New Jersey) presented the language change offered by the WWMA report.

At the CWMA 2019 Interim Meeting, Mr. Charlie Stutesman (Kansas) commented that he supports this item as voting if the phrase "be susceptible to" is removed and the word "advancement" is changed to "advance" as shown above. We recommend this item as a Voting item with these changes.

At the WWMA 2020 Annual Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed.

At the SWMA 2020 Annual Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed.

Regarding the NEWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the NEWMA 2020 Interim Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed.

Regarding the CWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the CWMA 2020 Interim Meeting, the only comments heard during Open Hearings were from Mr. Stutesman who supported the item as amended. The Committee recommends the item moving forward as a voting item with the proposed amendments by the NCWM S&T Committee.

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

MFM - Mass Flow Meters

MFM-20.1 V S.1.3.3. Maximum Value of Quantity Divisions.

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert’s Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

(NOTE: The Committee made changes to the item at the 2020 NCWM Annual Meeting that was held in January 2021. The Item under Consideration includes these changes.)

Source:
NIST OWM

Purpose:
Reformat to more clearly specify the maximum permissible quantity value for “d” for liquids, Compressed Natural Gas (CNG), and Liquefied Natural Gas (LNG) applications.

Item Under Consideration:
Amend NIST Handbook 44, Mass Flow Meters Code follows:

S.1.3.3. Maximum Value of Quantity-Value Divisions.

The maximum value of the quantity-value division shall not exceed the following.

- (a) For compressed natural gas dispensed as an engine fuel:
 - (1) 0.001 for gasoline gallon equivalent (GGE) units; or
 - (2) 0.001 diesel gallon equivalent (DGE) units; or
 - (3) 0.001 kg or 0.001 lb for mass units.
 - (b) For liquefied natural gas dispensed as an engine fuel:
 - (1) 0.001 for diesel gallon equivalent (DGE) units; or
 - (2) 0.001 kg or 0.001 lb for mass units.
- (Added 2019)

- (c) For all ~~other gases or liquids other than liquefied natural gas dispensed as an engine fuel~~ a maximum value not greater than 0.2 % of the minimum measured quantity.

(Amended 1994 and 2019)

(Amended 1994, ~~and 2019, and 2021~~)

Background/Discussion:

During its March 2019 collaborations with Mr. Dimitri Karimov (Liquid Controls, LLC) to rework the requirement, NIST OWM was made aware that there is a gap in this requirement with regard to the maximum quantity-value division for gases other than CNG. NIST OWM did not want to make any such corrective amendments to include *all* other gas applications at that time believing that this could jeopardize the proposal moving forward for adoption at the July 2019 NCWM Annual Meeting. OWM instead developed this proposal for submission in the 2020 cycle for a new paragraph to be designated S.1.3.3.(b) to address the maximum permitted value of “d” for all other gases.

Specifying the maximum size of the unit recognized for the sale of a commodity is: 1) consistent across the handbook codes; 2) essential for the selection of suitable dispensing equipment; and 3) necessary to facilitate transparency in sales transactions and for making comparisons in fuel pricing. A specification to address the maximum value of “d” for vapor (gaseous) products clearly applicable in Application paragraph A.2 was inadvertently omitted in previous modifications of the code in 1994 and 2016 to address “d” for alternative fuel applications. In spring 2019 while already in the process of addressing limits for the maximum “d” for LNG applications, it was deemed that any further amendments to the code to fully address all other product applications be resubmitted for national consideration during the 2020 weights and measures standards development cycle. This latest proposal clarifies and places a limit on the maximum value of the quantity division for indicated and recorded deliveries of hydrocarbon gases in the vapor state which is currently missing from the code.

In 2019, the weights and measures community was informed about the planned 2020 update of paragraph S.1.3.3 to specify a maximum quantity value for “d” for all other gas applications. No opposing arguments have been heard at this time since the proposed modification to paragraph S.1.3.3 is considered more of a housekeeping item.

During the 2020 NCWM Interim Meeting Open Hearings the Committee heard from Mrs. Tina Butcher (NIST OWM) who pointed out that this item is a housekeeping item to correct the omission of a specification for the maximum value of “d” for products that fall under the category “all gases other than CNG.” Mr. Karimov, speaking on behalf of the MMA, and Mr. Kevin Schnepf (California) supported this item.

During the Committee’s work session, the Committee agreed that this item should be given a Voting Status.

During the Committee’s 2020 Annual Meeting Open Hearings that were held as a virtual meeting in January 2021, the Committee heard comments from Mr. Clark Cooney (California) who expressed support for this item. Mr. Micheal Keilty (Endress + Hauser) did not support this item and suggested that it be downgraded. Mrs. Butcher explained that this item was developed in 2019 to address the omission of requirements for the maximum value for the quantity-value division “d” for LNG application. After review, a second omission was found that there was no specification for the maximum value of “d” for products that fall under the category of “all gases other than CNG and an additional change was made to correct this omission as it appears in the item of consideration. Mrs. Butcher also suggested changes to the purpose section of this item for clarity.

During the Committee’s 2020 Annual Meeting work session, the Committee agreed to the proposed changes in the Item Under Consideration and changes to the purpose section for clarity and agreed that this item with its changes be forwarded as a voting item to be ratified at the next NCWM in-person meeting. The change to the Item Under Consideration was to combine the two paragraphs that address “all gases other than” and “all liquids other than” into one paragraph. The item that was included in Publication 16 is provided below for reference and the revised change to the item is included above in the Item Under Consideration.

Note: For your reference this was the item that was included in the 2020 NCWM Publication 16:

Purpose:

Specify the maximum permissible quantity value of “d” for mass flow meters designed to dynamically measure gases other than Compressed Natural Gas (CNG). This is currently a missing component of paragraph S.1.3.3.

S.1.3.3. Maximum Value of Quantity-Value Divisions.

The maximum value of the quantity-value division shall not exceed the following.

(a) For compressed natural gas dispensed as an engine fuel:

- (1) 0.001 for gasoline gallon equivalent (GGE) units; or
- (2) 0.001 diesel gallon equivalent (DGE) units; or
- (3) 0.001 kg or 0.001 lb for mass units.

(b) For all gases other than compressed natural gas dispensed as an engine fuel a maximum value not greater than 0.2 % of the minimum measured quantity.
(Added 2020)

~~(b)~~ (c) For liquefied natural gas dispensed as an engine fuel:

- (1) 0.001 for diesel gallon equivalent (DGE) units; or
 - (2) 0.001 kg or 0.001 lb for mass units.
- (Added 2019)

~~(ed)~~ (ed) For all liquids other than liquefied natural gas dispensed as an engine fuel a maximum value not greater than 0.2 % of the minimum measured quantity.

(Amended 1994, ~~and 2019, and 2021~~)

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the WWMA 2019 Annual Meeting, Mr. John Barton (NIST OWM) commented that there was a gap noted in the changes adopted to S.1.3.3. during the 2019 NCWM Annual Meeting where gasses other than compressed natural gas were not addressed. This proposal amends the paragraph to address that issue. The Committee agrees that the item should have a Voting status.

At the SWMA 2019 Annual Meeting, the Committee heard no comments on this item. The Committee decided not to make a recommendation on this Item.

At the NEWMA 2019 Interim Meeting, the Committee and the body agreed that this item be moved to voting status as there are no negative aspects to the proposal. During Open Hearings, Mr. James Cassidy (Massachusetts), Mr. Steve Timar (New York), and Mr. Jim Willis (New York) voiced support.

At the CWMA 2019 Interim Meeting, Mr. Charlie Stutesman (Kansas) commented that he supports this item as voting. We recommend this item as a Voting item.

At the WWMA 2020 Annual Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

At the SWMA 2020 Annual Meeting, only voting and new items were reviewed during the meeting therefore this item was not reviewed.

At the NEWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the NEWMA 2020 Interim Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

Regarding the CWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the CWMA 2020 Interim Meeting, the S&T Committee heard no comments during open hearings on this item. The CWMA feels this item is fully developed and recommend this item move forward as a Voting item.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

MF21-1.1 W UR.3.3. Ticket Printer: Customer Ticket

Source:

Restaurant Technologies, Inc.

Purpose:

Allow customers the option of receiving a digital ticket (emailed) in lieu of a printed ticket at time of delivery.

Item Under Consideration:

Amend NIST Handbook 44, Mass Flow Meters Code as follows:

UR.3.3. Ticket Printer: Customer Ticket. – Vehicle-mounted metering systems shall be equipped with a ticket printer which shall be used for all sales where product is delivered through the meter. A copy of the ticket issued by the device shall be left with the customer at the time of delivery or as otherwise specified by the customer. **For systems equipped with the capability of issuing an electronic receipt, ticket, or other recorded representation, the customer may be given the option to receive any required information electronically (e.g., via email, cell phone, website, etc.) in lieu of a hard copy.**

(Amended 20XX)

Background/Discussion:

- 1) Our customers are requesting receipt of delivery ticket via email.
- 2) We deliver bulk cooking oil to restaurants, often during non-operating hours. When nobody from the restaurant is present to receive the delivery ticket, it is stuck in or taped to the back door, and often ends up lost. Our customers are requesting that we **do not** leave a hard copy behind.
- 3) All of our sales are private contract sales; we do not sell to the public. Therefore, the need for a hard copy delivery ticket is not as critical as would be in a public sale setting.
- 4) In addition to electronic receipts, our customers are granted access to a website that shows their daily usage of cooking oil and contains direct links to electronic delivery tickets. This website will allow the customer to view all of their delivery tickets to date, and is in addition to the emailed delivery ticket.
- 5) Our metering system is NTEP certified and in full compliance of NIST Handbook 44. All required delivery ticket content, per Section 3.37, is captured in electronic format.

Language similar to what is being proposed above was added in 2014 to Section 1.10, Paragraph G-S.5.6 in an attempt to allow electronic delivery tickets. While this change was intended to apply to all sections of the code, it conflicts with existing language in the General Code (ref. Code Application, G-A.2) that does not allow the language in the

General Code to supersede the requirements of the specific code. So, in the case of Section 3.37, the code language requiring a hard copy ticket takes precedent.

The submitters assume there will be no arguments as this proposal is similar, in language and intent, to what was added in 2014 to Section 1.10, Paragraph G-S.5.6.

The submitter requested voting status for this item in 2021.

During the 2021 NCWM Interim Meeting Open Hearings the Committee heard from Mr. Thomas Koleman (Restaurant Technology, Inc) who supported this item moving forward as a voting item. Ms. Diane Lee (NIST OWM) noted that Block 4 in this agenda includes a proposal for a change to the same paragraph in NIST HB 44. Mr. Dmitri Karimov (MMA) suggested to merge this with Item Block 4 or withdraw the item. Ms. Cheryl Ayers (New Hampshire) stated that there is still the need for a printed ticket. It was explained that they are being service when the establishment is closed so electronic tickets are requested. Mr. Kurt Floren (Los Angeles County, California) supported Ms. Ayer's comment.

During the Committee's work session, the Committee agreed to withdraw this item due to comments that expressed the need for a printed receipt.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2020 WWMA Annual Meeting, Mr. Matthew Douglas (California) believes the paragraph needs to be wordsmithed. The Committee agrees to recommend that the item be given a Developing status. They are also recommending the submitter further define the intent of the item and continue vetting through the regions.

At the 2020 SWMA Annual Meeting there was no report on this item.

At the 2020 NEWMA Interim Meeting, the Committee agrees with the body that this proposal does not have merit, is redundant, and should be considered as a Withdrawn item. During Open Hearings, the Committee received comments from multiple agencies that the general code already provides for the intent of the submitted item.

At the 2020 CWMA Interim Meeting, the S&T Committee heard several comments from regulatory officials about the merits of this item. They recommended this item move forward as a Developing item and suggest that the developers of this item and Item Block 4 work together on this issue.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

EVF - Electric Vehicle Fueling Systems

EVF-19.1 V S.3.5. Temperature Range for System Components. and S.5.2. EVSE Identification and Marking Requirements.

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert's Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the

Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

Source:

NIST OWM

Purpose:

Ensure there are no inconsistencies in the tentative code between the temperature range requirement of $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ ($-40\text{ }^{\circ}\text{F}$ to $185\text{ }^{\circ}\text{F}$) specified for the EVSE's operation and the requirement in paragraph S.5.2. EVSE Identification and Marking Requirements that specifies an EVSE must be marked with its temperature limits when they are narrower than and within $-20\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ ($-4\text{ }^{\circ}\text{F}$ to $122\text{ }^{\circ}\text{F}$).

Item Under Consideration:

Amend NIST Handbook 44, Electric Vehicle Fueling Systems (EVFS) – Tentative Code as follows:

S.5.2. EVSE Identification and Marking Requirements. – In addition to all the marking requirements of Section 1.10. General Code, paragraph G-S.1. Identification, each EVSE shall have the following information conspicuously, legibly, and indelibly marked:

- (a) voltage rating;
- (b) maximum current deliverable;
- (c) type of current (AC or DC or, if capable of both, both shall be listed);
- (d) minimum measured quantity (MMQ); and
- (e) temperature limits, if narrower than and within ~~$-20\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ ($-4\text{ }^{\circ}\text{F}$ to $122\text{ }^{\circ}\text{F}$)~~ **$-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ ($-40\text{ }^{\circ}\text{F}$ to $185\text{ }^{\circ}\text{F}$).**

Background/Discussion:

In 2012 the USNWG began work to develop legal metrology standards for electricity measuring systems used in both electric vehicle fueling and submetering applications under a single code. In 2014 the USNWG agreed to widen the temperature range in NIST HB 44, section 3.40, paragraph S.3.5. for systems components to $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ based on input that the wider range is an ANSI standard commercial temperature range. This range was adopted in 2015 and appears in the current NIST HB 44. However, only in ANSI C12.1 Section 4 in 4.7.3.16 Test Number 30 Effect of Operating Temperature is $-30\text{ }^{\circ}\text{C}$ specified as the lowest minimum temperature limit and in 4.7.3.17 Test Number 31 Effects of Relative Humidity is $+85\text{ }^{\circ}\text{C}$ specified as the maximum temperature limit.

Electric Vehicle Service Equipment (EVSE) must be capable of operating accurately over the temperature range specified in Section 3.40 Electric Vehicle Fueling Systems – Tentative Code or marked accordingly. Paragraph S.3.5. Temperature Range for Systems Components specifies that an EVSE not capable of operating over the specified temperature range of $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ ($-40\text{ }^{\circ}\text{F}$ to $185\text{ }^{\circ}\text{F}$) must be marked with its narrower temperature range as shown below.

S.3.5. Temperature Range for System Components. – EVSEs shall be accurate and correct over the temperature range of $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ ($-40\text{ }^{\circ}\text{F}$ to $185\text{ }^{\circ}\text{F}$). If the system or any measuring system components are not capable of meeting these requirements, the temperature range over which the system is capable shall be stated on the NTEP CC, marked on the EVSE, and installations shall be limited to the narrower temperature limits.

The submitter has been working to ensure there are no inconsistencies between the temperature range requirements specified for the EVSE's operation and the requirement in paragraph S.5.2. EVSE Identification and Marking Requirements that specify an EVSE must be marked with its temperature limits when they are narrower than and within $-20\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ ($-4\text{ }^{\circ}\text{F}$ to $122\text{ }^{\circ}\text{F}$).

During the 2019 NCWM Interim Meeting Open Hearings, the Committee heard no comments on item EVF-3. During the Committee's work session, the members agreed with the submitter and the regional weights and measures associations that this item should be assigned developing status.

During the 2019 NCWM Annual Meeting, Mrs. Tina Butcher (NIST OWM) updated the Committee stating that work is ongoing through the USNWG subcommittee and recommends that this item be carried over to the next revision cycle. The Committee agreed by retaining the item's Developing status and no changes to the item were recommended at this time.

The NCWM National Type Evaluation Program (NTEP) has indicated that a temperature range of -40°C to $+85^{\circ}\text{C}$ (-40°F to 185°F) is beyond the capabilities of its evaluation laboratories. An option that NTEP has also indicated it may explore is to accept data from accredited facilities capable of testing systems over the entire -40°C to 85°C (-40°F to 185°F) temperature range. Manufacturers will have to provide the test data needed by NTEP to evaluate these systems for this environmental factor.

NIST has received some feedback and is continuing an assessment of the temperature ranges specified in these paragraphs. To date no negative comments have been received on the newly developed proposal for expanding the paragraph S.5.2 marking requirement temperature range from -20°C to $+50^{\circ}\text{C}$ (-4°F to 122°F) to -40°C to $+85^{\circ}\text{C}$ (-40°F to 185°F) from the inquiry circulated to the USNWG Electric Vehicle Fueling Equipment Subgroup. The proposed modification to paragraph S.5.2 also appears to align the marking and operating temperature range requirements in NIST HB 44 with the requirements California is developing for its California Code of Regulations Section 4002 EVFS (3.40).

The proposed modification to paragraph S.5.2 to align the marked temperature range limits with those specified for operation of an EVSE will eliminate any inconsistencies for this parameter. Consequently, having heard no opposition to this modification the submitter recommends this item's status be upgraded from developing to voting in 2020.

During the 2020 NCWM Interim Meeting Open Hearings the Committee heard from Mrs. Butcher, who reported that this item aligns requirements for references to temperature limits so that the temperature limits in paragraph S.5.2 now align with the temperature limits in S.3.5. Mr. Kevin Schnepf (California) supported the item.

During the Committee's work session, the Committee agreed that this item should be given a Voting status.

During the Committee's 2020 Annual Meeting Open Hearings that were part of a virtual meeting held in January 2021, the Committee heard comments from Mr. Clark Cooney (California), who noted that the proposal will align with California Codes. Representatives from Oregon and New York also supported the item. The USNWG Electric Vehicle Fueling Equipment Subgroup (EVFES) agreed in January 2020 to recommend this proposal for adoption during the Spring 2020 regional associations meetings and 2020 NCWM Annual Meeting to eliminate any conflict in the temperature range for operation and required marking information.

During the Committee's work session, the Committee made no changes to the item under consideration and the Committee agreed that this item be forwarded as a Voting item to be ratified at the next NCWM in-person meeting.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

WWMA 2019 Annual Meeting: Mr. Clark Cooney (CA) stated his support for this item. The Committee agrees that the item is fully developed and should be given a Voting status.

At the 2019 SWMA Annual Meeting, the committee heard no comments on this item.

At the 2019 NEWMA Interim Meeting, the Committee and members agreed that this item be moved to Voting status. During Open Hearings, Mr. Jim Willis (New York) commented that the markings on EVSE are currently widely varied and supports the changes. Mr. James Cassidy (Massachusetts) and Mr. John McGuire (New Jersey) voiced support.

At the 2019 CWMA Interim Meeting, the Committee heard no comments on this item. The Committee decided to not make a recommendation.

At the WWMA 2020 Annual Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

At the SWMA 2020 Annual Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

At the NEWMA 2020 Annual Meeting, no meeting was held due to the pandemic.

At the NEWMA 2020 Interim Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed.

Regarding the CWMA 2020 Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the CWMA 2020 Interim Meeting, the S&T Committee heard no comments during open hearings on this item. We feel this item is fully developed and recommend this item move forward as a Voting item.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

EVF-20.1 D S.1.3.2. EVSE Value of the Smallest Unit.

(The Item under Consideration includes editorial changes by the submitter (NIST OWM) to correctly reflect the appropriate strikeout/underlines when editing existing text in NIST HB 44. NIST OWM included other recommendations for changes to the text in their analysis but these changes were more than editorial.)

Source:
NIST OWM

Purpose:
Specify the maximum permissible value of the indicated and/or recorded electrical energy unit by an EVSE. Establish a value for the energy unit of measurement (kilowatt-hour) that is: suitable for all commercial transactions and does not significantly lengthen the time (by a factor of 25) to conduct a test of an EVSE.

Item Under Consideration:
Amend NIST Handbook 44, Electric Vehicle Fueling Systems follows:

S.1.3. EVSE Units.

S.1.3.2. EVSE Value of Smallest Unit. – The value of the smallest unit of indicated delivery by an EVSE, and recorded delivery if the EVSE is equipped to record, shall not be greater than 0.0005 MJ or 0.0001 kWh.

(Amended 2020)

Background/Discussion:

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Ms. Juana Williams
 NIST Office of Weights and Measures
 (301) 975-3989, juana.williams@nist.gov

In 2014 the U.S. National Work Group (USNWG) on Electric Vehicle Fueling and Submetering (EVFS) deliberated about the Electric Vehicle Fueling System's appropriate value for the display of electrical energy when sold in kilowatt-hour units of measurement. Based on the typical EVSE's ratings (i.e., charging power and current) the work group agreed that the value of the indicated or recorded charge should be in increments of 0.001-kilowatt hour (kWh). Members of the work group noted that the value could be inexpensively modified. Most recently it has been determined that the currently specified value of 0.001 kWh for the electricity unit of measurement in relation to the time for a test standard to complete an accuracy test at 10 % of the maximum deliverable amperes increases the length of the test by a factor of 25.

Each NIST Handbook 44 code specifies the appropriate unit(s) of measurement (indicated and recorded) that is permitted for all device applications that a code applies to. The accepted SI (metric) unit of measurement for a device application in each code is in most cases followed by its equivalent corresponding recognized U.S. customary unit. Measurements in SI or customary units can be supported through calibrations by an accredited (or recognized) laboratory. Each handbook code also specifies the maximum value for a unit of measurement that can be indicated or recorded by the device for a specific product application or rate of delivery.

Unlike the scales' codes, the EVSE code specifies the "smallest" value of the unit that is permitted to be indicated for the quantity of electricity being measured; whereas the scales codes specify the value that the unit *shall be equal to or shall not be greater than*. The language in the scales code clearly states that there is only one acceptable value for the unit of measurement or establishes a value that the unit cannot exceed.

The measuring devices codes specify that the smallest value for the unit of delivery indicated or recorded for a commodity *shall not exceed* a specific value. The value varies depending on the type of commodity and/or device's flow rate or falls into the category of all other meters. Yet it is clear the unit of measurement's value cannot be exceeded although lesser values are acceptable if the device has that capability, maintains accuracy, and sales in that particular indicated or recorded quantity are appropriate.

To provide adequate resolution (i.e., value of the kWh unit) in the EVSE's customer display of the electrical energy transaction information and to facilitate accuracy testing of the system two alternate proposals were developed that recommend somewhat different modifications of paragraph S.1.3.2. EVSE Value of Smallest Unit.

The first option for modifying the code that was developed and circulated to the Electric Vehicle Fueling Equipment (EVFE) Subgroup for consideration would be to recognize EVSEs equipped with a customer display of 0.005 MJ or 0.001 kWh and a test mode display on the EVSE face, accessible internally, or activated by controls accessed by the official that indicates in 0.0005 MJ or 0.0001 kWh increments.

Also, part of the information circulated to the Subgroup included a second option of modifying the value of the displayed and/or recorded kilowatt-hour energy units from 0.005 MJ or 0.001 kWh to a higher resolution of 0.0005 MJ or 0.0001 kWh. The first option shown below would modify paragraph S.1.3. EVSE Units to include a new subparagraph S.1.3.3. EVSE Value of Smallest Unit Test Mode to allow for a higher resolution value of the kilowatt hour indications as a test mode display separate from the display used for the display transaction. The test mode display would either continuously indicate on the face of the dispenser or an internal display accessible during the inspection and test of the dispenser or display the quantity by using controls on the device.

S.1.3. EVSE Units.

S.1.3.3. EVSE Value of Smallest Unit Test Mode. – EVSE shall display the electricity measured for each transaction in 0.0005 MJ or 0.0001 kWh energy units through:

(a) a continuous indication on the face of the EVSE;

(b) an internal display accessible during the inspection and test of the EVSE; or

(c) a display of the quantity by using controls on the device.

(Added 20XX)

S.1.3.34. Value Defined. ...

(Amended 2020)

A test display mode is permissible for the mass flow meter compressed natural gas and liquefied natural gas dispenser applications. Although this option was entertained by the USNWG in 2014, further discussion would be needed to provide guidelines on how the indication must operate to comply with handbook requirements. When this option was circulated in 2019 to the USNWG EVFE Subgroup, the interest was more in favor of a single higher resolution display (i.e., 0.0001 kWh). However, there was some concern expressed about potential rounding issues were there to be two separate indications having different display resolution.

Since the 2015 adoption of NIST HB 44 Section 3.40 paragraph S.1.3.2. EVSE Value of Smallest Unit has specified that the smallest unit of indicated delivery by an EVSE, and recorded delivery if the EVSE is equipped to record, shall not be greater than 0.005 MJ or 0.001 kWh. It is anticipated that the community would question the cost to modify the equipment's design; however, after discussions about the possible quantity value of "d" as large as 0.1 kWh, industry indicated that the value for the unit of measurement could be inexpensively modified. The EVSE code has tentative status and to date no equipment has undergone the type evaluation process. The community anticipates there will be slight modifications to requirements and test procedures to address various generations of equipment, design configurations, and business models in the marketplace.

During the 2020 NCWM Interim Meeting Open Hearings, the Committee heard from Mrs. Tina Butcher (NIST OWM), who reported that this item was submitted by NIST OWM to modify the value for "d" specified for Kilowatt-hour for EVSEs to recommend a higher resolution for "d" that does not significantly lengthen the time to conduct the accuracy test of EVSE. Mrs. Butcher added that it is uncertain if the item is fully developed and requestee it be made developing. Mr. Kevin Schnepf (California) stated California has already made the change; however, he supports a Developing status for this item. Mr. Jim Willis (New York) provided similar comments to those of Mr. Schnepf. *Note: The NIST OWM analysis includes a recommendation that the phrase "shall not be greater than" be removed.*

During the Committee's work session, the Committee agreed that this item should be given a Developing status to allow the submitter to continue to work with the work group concerning this item.

At the 2021 NCWM Annual Meeting, Ms. Juana Williams explained that NIST OWM recommends the community reconsider the original proposed modifications of paragraph S.1.3.2 which do not limit the electrical energy unit to being expressed only as a single fixed numerical value but permit a manufacturer to design a display that measures in a numerical value of 0.0005 MJ or 0.0001 kWh or some other numerical value as long as the chosen value does not exceed those MJ or kWh maximum values specified in paragraph S.1.3.2. Whatever the quantity unit value, it would remain unchangeable during the commercial use of the system or dispenser. Proposed new paragraph S.1.3.X. Expressed Value of EVSE Electrical Energy Unit will clarify the value of the quantity unit shall only be expressed as either decimal multiples or submultiples of the numbers 1, 2, or 5 as specified in paragraph S.1.3.X. shown below.

S.1.3.X. Expressed Value of EVSE Electrical Energy Unit. – The electrical energy unit value shall be a decimal multiple or submultiple of 1, 2, or 5.

At the Committee's work session, the Committee recommended a Developing status for this item.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2019 WWMA Annual Meeting, Mr. Clark Cooney (California) stated his support for this item. The Committee agrees that the item is fully developed and should be given a Voting status.

At the 2019 NEWMA Interim Meeting, the Committee and the body agree that this item be moved to a developing status as it has merit. During open hearings, Mr. Steve Timar (New York) questioned if MMQ should also be changed. Mr. Willis stated that moving the resolution to 1/10,000th may be a little extreme and recommends changing the resolution to 1/1000th. Mr. Willis also questions whether changing the resolution effects the time to conduct a test.

At the 2019 CWMA Interim Meeting, the Committee recommended this item as a Voting item.

At the 2020 WWMA Annual Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed.

At the 2020 SWMA Annual Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed.

Regarding the 2020 NEWMA Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the 2020 NEWMA Interim Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed.

Regarding the 2020 CWMA Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the CWMA 2020 Interim Meeting, the only comments heard on this item by the S&T Committee were from Mrs. Butcher giving an update from the USNWG on EVFS for this item have yet to reach a consensus on the proposed or alternate language and asked the Committee to recommend a Developing status for this item. The Committee concurs with her recommendation.

At the 2021 NEWMA Annual Meeting, Mr. Willis stated that he is not convinced that the resolution needs to be that fine and questions if it is necessary. Ms. Williams responded that the MMQ may play a role and that there are other factors involved in testing and test time. Mr. Lou Sakin (Massachusetts) shared concerns about the financial impact to meter manufacturers meeting finer tolerances. Ms. Williams elaborated on the full load and light load testing procedures. NIST OWM believes this modification would help avoid any unintentional implication that increments in units such as 0.0003 or 0.0007 MJ or kWh (i.e., Increment other than 1,2,5) would be appropriate. The NEWMA S&T Committee recommends that the item be remain Developing.

At the CWMA 2021 Annual Meeting, Ms. Williams provided information on this item. NIST OWM recommends that this item remain Developing. Ms. Williams suggested the following change to the proposal:

S.1.3. EVSE Units.

S.1.3.2. EVSE Value of Smallest Unit. – The value of the smallest unit of indicated delivery by an EVSE, and recorded delivery if the EVSE is equipped to record, shall ~~not be greater than~~ **0.0001 MJ or 0.0001 kWh.**

(Amended 2020)

The USNWG has not reached a consensus on this item and recommends that it remain developing. CWMA recommends that this item remain developing.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

EVF-20.2 V Appendix D – Definitions: submeter

(This item was adopted.)

This item was designated as a “Voting” item by the Committee at the 2020 NCWM Interim Meeting. At the 2020 NCWM Annual Meeting, due to the 2020 COVID-19 pandemic, this meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items were addressed in the subsequent 2021 NCWM Interim Meeting. This item did not receive sufficient votes to pass or fail and was therefore returned to the Committee and the Committee gave this item an Informational status at the 2020 Annual Meeting. During the January 2021 Interim meeting the Committee forwarded this item as a Voting item.

(This item will update Section 3.40. Electric Vehicle Fueling Systems - Tentative Code. The Item under Consideration reflects changes that were made by the Committee during its 2020 NCWM Annual Meeting work session so that it shows the correct strikeout and underlines needed when editing existing text in NIST HB 44.)

Source:

USNWG EVF&S

Purpose:

To provide a clear technical definition of what a sub-meter is.

Item Under Consideration:

Amend NIST Handbook 44, Section 3.40. as follows:

submeter. – A meter or meter system downstream of the ~~furnished, owned, installed, and maintained by the customer who is served through a utility owned electric~~ master meter. [3.40]

(Added 20XX)**Background/Discussion:**

Changes being made to this definition up-dates the terminology being used in the Watthour Metering sections by the Working Groups Submeter watt-hour Subgroup. There has been confusion in some state jurisdictions causing the enforcement agency to believe that only a Utility could operate a sub metering system. A technical definition that does not use references to “Utility” which appears to be interpreted as allowed only if provided by the “Serving Utility”. This definition also provides some technical consideration on how to categorize meters. UL/IEC/CSA61010-01 ED3 provides technical detail on where a meter can be in building wire infrastructure. This definition approach would make a clear distinction a specific meter’s ability to be in various places in the wiring infrastructure, in technical terms and clear up whether it must be specifically provisioned by the “Serving Utility”. The following excerpts are referenced from 61010-1© IEC:2010 Annex K identifying, technically, where meters of specific protection design can be. If there is another requirement to identify sales and service ownership and allowances, it is recommended that this be done elsewhere in the code.

- **OVERVOLTAGE CATEGORY IV** is for equipment installed at or near the origin of the electrical supply to a building, between the building entrance and the main distribution board. Such equipment may include electricity tariff meters and primary overcurrent protection devices. Manufacturers may also design equipment for OVERVOLTAGE CATEGORY IV when an even higher degree of reliability and availability is desired.
- **OVERVOLTAGE CATEGORY III** is for equipment intended to form part of a building wiring installation. Such equipment includes socket outlets, fuse panels, and some MAINS installation control equipment. Manufacturers may also design equipment for OVERVOLTAGE CATEGORY III when a higher degree of reliability and availability is desired.

- **OVERVOLTAGE CATEGORY II** is for equipment intended to be supplied from the building wiring. It applies both to plug-connected equipment and to PERMANENTLY CONNECTED EQUIPMENT. Sub-clause 6.7 covers only the requirements for OVERVOLTAGE CATEGORY II with a nominal supply voltage up to 300 V. The requirements for higher OVERVOLTAGE CATEGORIES and for OVERVOLTAGE CATEGORY II with a nominal supply voltage above 300 V are covered by this annex.
- **OVERVOLTAGE CATEGORY I** is used, within the context of IEC 60364-4-44, for equipment intended to be connected to a MAINS supply in which means have been taken to substantially and reliably reduce TRANSIENT OVERVOLTAGES to a level where they cannot cause a HAZARD.
- OVERVOLTAGE CATEGORY I is not relevant to this standard.

Generalizing the definition allows water, gas, and other revenue billing categories of meter to be included. It does not express to ownership and operation of submeter. That should also be done elsewhere in the code.

The submitter commented that at this time the only opposing argument might be that a “Serving Utility” may react to not being in control of these devices. The code should also be clear in other areas besides the definition for understanding abilities to use a sub-metering for tariff billing down-stream of the mains meter.

During the 2020 NCWM Interim Meeting Open Hearings, the Committee heard from Mr. Kurt Floren (Los Angeles County, California) who asked if there is a definition for “master meter” that is included in the proposal. Mr. Floren noted that a definition is needed. Mrs. Tina Butcher (NIST OWM) agreed with Mr. Floren’s comment and noted that the work group should provide a definition. Mr. Richard Suiter (Richard Suiter Consulting) suggested not using “master meter” but rather “primary” meter instead.

During the Committee work session, the Committee agreed that this item should be given a Voting status and that it should be amended to reference the appropriate NIST HB 44 Code section, which is section 3.40.

During the Committee’s 2020 Annual Meeting Open Hearings that was held as a virtual meeting in January 2021, the Committee heard many comments from State Weights and Measures Jurisdictions that this item should be downgraded. Those in support of making the item Informational included Mr. Kevin Schnepp (California) and Mr. Floren. Mr. Steve Harrington (Oregon) and Mr. Micheal Keilty did not support the item. Mrs. Butcher noted that corrections were needed to the item under consideration to correctly reflect the edits to the definition. Since the definition for submeter is currently in NIST Section 3.40. Electric Vehicle Fueling Systems -Tentative Code, the definition under the item of consideration should appear with appropriate strikeouts to show what changes are being proposed.

During the Committee’s 2020 Annual Meeting work session, the Committee agreed to make the item Informational with editorial changes to the item under consideration. The item under consideration above reflects editorial changes that were accepted by the Committee during its 2020 NCWM Annual Meeting work session.

During the Committee’s 2021 Interim Meeting Open Hearings which was held after the 2020 Annual meeting in January 2021, the Committee heard no additional comments on this item.

During the Committee’s work session, the Committee noted that the proposal will update the tentative electric vehicle code and as such the Committee suggested that the proposal should include the term “electric” so that it is understood that this applies to a specific code and agreed to add “**electric**” master meter to the definition.

During the Committee’s 2021 Annual Meeting Open Hearings, the Committee heard concerns with using the term master meters because it has not yet been fully defined. Ms. Juana Williams (NIST, OWM) provided technical comments that were posted on the NCWM website and also noted that the USNWG agreed to a voting status for this item. Mrs. Butcher noted that the Electrical community has a different meaning for the term “master meter.” It was also explained that the definitions in the tentative EVF code are moved to the definitions section of the handbook when the tentative Code becomes a permanent Code. It was mentioned that adding the word “**electric**” in the definition

helps to clarify that the term “master meter” in the definition is referring to the specific electrical community’s use of master meters.

During the Committee’s work session, the committee agreed that adding the word “**electric** master meter” would help to clarify its specific use for the electrical community and agreed to a voting status for this item.

Note: For your reference the Item under consideration that was provided in Publication 16 for the 2020 Annual meeting is included below:

Submeter – a meter or meter system downstream of the master meter. [3.40]

(Added 20XX)

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2019 WWMA Annual Meeting, Ms. Lisa Warfield (NIST OWM) stated that this item is fully developed and ready for a Voting status. Mr. Kevin Merritt (Idaho) asked if this language would apply to an LPG meter. Ms. Warfield responded that this does not apply to an LPG meter and that the definition for “submeter” referred to in this proposal should not be confused with the use of “master meter” as used when referring to calibrations. Mr. Floren asked the question “is the term master meter defined?” Ms. Warfield responded that the term “master meter” is defined and that the definition was derived from that definition from Measurement Canada.

The Committee agrees this proposal has merit and that it is fully developed and should be given a Voting status. The Committee also recognizes that the stated Purpose should be amended to state how the change would affect EVSE Code paragraph 3.40., Appendix D, Definitions as shown below.

~~**submeter. — A system furnished, owned, installed, and maintained by the customer who is served through a utility-owned master meter. [3.40]**~~

Submeter –a meter or meter system downstream of the master meter. [3.40]

(Added 20XX)

At the 2019 SWMA Annual Meeting, the item was not submitted to this region.

Regarding the 2019 NEWMA Interim Meeting, the item was not submitted to this region.

Regarding the 2019 CWMA Interim Meeting, the item was not submitted to this region.

At the 2020 WWMA Annual Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

At the 2020 SWMA Annual Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed.

Regarding the 2020 NEWMA Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the 2020 NEWMA Interim Meeting, only voting items and new items were reviewed during the meeting. This item was not reviewed.

Regarding the 2020 CWMA Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the 2020 CWMA Interim Meeting, the only comments the S&T Committee heard, from both NIST OWM and state regulatory officials, expressed a concern with the use of the word “master meter.” Mrs. Butcher explained that the term “master meter” has a widely accepted definition in the electric vehicle and watt hour industry. We feel this item is fully developed and recommend this item move forward as a Voting item.

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

EVF-21.1 D A.1. General

Source:

ABB, BTCPower, Electrify America, Edison Electric Institute, EVConnect, EVgo, Greenlots, Rivian, Siemens, Tesla, Tritium

Purpose:

To provide clarity on how NIST HB 44 Sec. 3.4 tentative code will apply to existing EVSE that are in the ground before it becomes effective by identifying which elements are nonretroactive.

Item Under Consideration:

Amend NIST Handbook 44, Electric Vehicle Fueling Systems as follows:

A.1. General – This code applies to devices, accessories, and systems used for the measurement of electricity dispensed in vehicle fuel applications wherein a quantity determination or statement of measure is used wholly or partially as a basis for sale or upon which a charge for service is based.

A.1.1. Effective Dates for DC EVSE – All DC EVSE used for commercial purposes and put into service on or before January 1, 2023 are exempt from this standard for a period of 10 years from the date put into service. comply

A.1.2. Effective Dates for AC EVSE – All AC EVSE used for commercial purposes and put into service on or before January 1, 2022 are exempt from this standard for a period of 10 years from the date put into service.

Background/Discussion:

While it is important to ensure that consumers are receiving accurate and transparent information regarding the accuracy of EV charging stations, the cost to retrofit existing stations that often do not include an integrated meter, especially DCFC where commercial DC metering technology is not readily available today, will be cost prohibitive. In California Initial Statement of Reasons (ISOR) for adopting specifications and tolerances requirement for commercial EVSE, California estimated that it costs approximately \$4,500 to upgrade existing Level 2 stations and \$20,000 to upgrade existing DCFC. To put this into context, California DMS utilized 2015 DOE data stating that the average commercial Level 2 EVSE costs between \$3,000-\$6,000 and the average DCFC up to \$40,000 or more. The retrofit costs would represent a significant investment amount that does not seem warranted. The ISOR is available here: www.cdfa.ca.gov/dms/pdfs/regulations/EVSE_ISOR.pdf. According to DOE AFDC station locator there are 23,000 level 2 station with 66,000 connectors in the U.S. and 3,700 DCFC stations with 14,000 connectors. Being conservative and utilizing just the number of stations, it would cost \$92M to upgrade the existing Level 2 station in the U.S. today and \$74M to upgrade the existing DCFC stations, a number that is expected to grow as more stations are deployed. Placing this excessive upgrade burden on manufacturers and network operators is not feasible and an alternative pathway needs to be explored to ensure consumer transparency and EVSE accuracy for existing stations without requiring extensive retrofits. This number also does not include the amount of public funding across various states that has been invested in these EVSE that would prematurely potentially be ripped out and replaced. It could also have the unintended consequence that the EV industry stops charging for charging services at existing sites or shut them down if the investment in retrofits is greater than the benefit of continuing to operate. Stranded assets across the country are a valid concern and should not be taken lightly. It is important to not prematurely replace EVSE in the field until the useful life of the system has been obtained. Spending a significant amount of capital to upgrade

existing stations rather than investing in new infrastructure does not appear aligned with EV deployment goals. Therefore, it is recommended that there is consideration for making sure requirements are nonretroactive and there is a phase in timeline for existing stations. The language utilized above is similar to what California DMS implemented, which was the first state to adopt a version of NIST Handbook 44 Sec 3.4 for EVSE. The date for DC EVSE is set at January 1, 2023, to match California's timeline but also because this is when DC metering technology is expected to be commercially available in the market and integrated into DC EVSE by most EVSE manufacturers that are either working on their own product or with third party meter manufacturers.

In general, it appears that there is some openness to considering how legacy EVSE that are in the ground today should be treated when considering that DC metering technology integrated into the EVSE was not commercially available when many of these stations were developed. The main concern that has been raised is regarding whether there should be an overall exemption for existing EVSE to the measurement provisions in NIST HB 44 Sec 3.4 or whether existing EVSE should be exempt from certain requirements in the subsections of Sec 3.4 that are not feasible to attain. In reviewing the subsections of Sec 3.4, the proposal submitters determined that it would not be feasible to meet most subsections of Sec 3.4 with equipment that is in the ground with the exception of S.5 Marking (except S.5.2) and S.6 printing requirements. To ensure there is not confusion between which stations were in the ground prior to dates referenced above, EVSE owners and operators will need to work with local weights and measures officials on a self-reporting mechanisms or some other mechanism for tracking station service dates. California will be the first state that will need to determine how this process will operate in the field given it has already adopted the exemption noted above and compliance for new AC stations is effective January 1, 2021. On the consumer side, EVSE operators and owners today can provide certain provisions to ensure the accuracy of the commercial transaction that can be facilitated outside of having a meter integrated into the EVSE. For instance, some owners and operators may be able to utilize the accuracy that is traceable via the measurement technology in the EV that accounts for any losses and ensure the consumer is being accurately and fairly billed for what he or she is receiving.

The submitter requested voting status for this item in 2021.

At the Committee's Open Hearings at the 2021 NCWM Interim Meeting, Ms. Francesca Wahl (Tesla) and Mr. Samuel Ferris (California) supported a developing status for this item. Mr. Ferris noted that an exemption from requirements in the Handbook is uncommon and that the life span of the equipment may only be seven to ten years. Mr. Brad Juhasz (AFTA) supported this item. Mr. Kevin Miller (Charge Point) expressed concerns with allowing an exemption for 10 years and noted equipment should be able to meet the requirements. He too supported a Developing status for this item. Mr. Keith Bradley (Electrify America) mentioned that he looks forward to working with everyone on this item and that he supports a Developing status for this item. Ms. Diane Lee (NIST OWM) noted that the proposal is not clear as written and expressed concerns with an exemption for 10 years.

During the Committee's work session, the Committee agreed to a Developing status for this item. The Committee suggested that the submitters of this item consider the responses to the proposal from the regional meetings, NIST, OWM and EVFS work group and update the proposal accordingly to address the comments/concerns and, as necessary, prepare a revised proposal for the EVFS work group to address the concerns with this item.

At the 2021 Annual Meeting Open Hearings, the Committee heard from Ms. Juana Williams (NIST OWM), who reviewed concerns with the proposal and stated that it was unclear as to the exact type of use that entitles an EVSE to an exemption to NIST HB 44 requirements. Ms. Williams also pointed out that the exemption would allow a generation of devices to operate for 10-years without having to comply with the requirements and could be viewed as competitively unfair to traditional or other alternative vehicle fueling applications. Ms. Wahl noted that she will be working to incorporate feedback and will work with the EVF National Work group to develop an updated proposal. Ms. Wahl also provided a letter to the S&T Committee concerning the Developing status for this item.

At the Committee's work session, the Committee agreed with a Developing status for this item.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2020 WWMA Annual Meeting, Tesla, EV Connect, EV Go – Francesca Wahl – presentation on Section 3.4. charging evolves and technology changes. They are trying to address the tentative code California is now using. Charging involves many different speeds and levels. Trying to fit charging into what consumers are doing rather than making it a separate event (based on convenience). Metering technology is now becoming more commercial. Retro-fit costs are excessive. Add the 10-year phase-in that California currently recognizes. A copy of the presentation that was provided is available on the WWMA website.

Mr. Kevin Schnepf (California) commented that the 10-year extension was political in California and may not be necessary at the national level. Mr. Schnepf believes the indicator should not be solely tied to a mobile device. The extension of the accuracy may not be necessary for the national level. Note that some areas have sub-meters at residential units that fall under commercial device applications. California-DMS would ask the Committee look at the concessions that California made as to whether this should be applied to NIST HB 44.

Mr. Mahesh Albuquerque (Colorado) supports all the proposals to move on to a voting item. He agrees with the comments made but wants to keep the process moving forward. Perhaps change the exception time to say “up to 10 years” allowing jurisdictions to make their own determination. Ms. Williams submitted written comment after open hearings and will be posted on the WWMA website.

The Committee agrees to recommend this item be assigned a Developing status. The Committee also recommends the submitter continue to work with their stakeholders and jurisdictions to develop the item and consider language with regards to the 10-year period.

At the 2020 SWMA Annual Meeting during the Open Hearing, the Committee heard from Ms. Wahl, who gave a presentation on the industry’s support of these items, and willingness to develop them. The Committee also heard from Mrs. Tina Butcher (NIST OWM), who stated that the item needs terminology work and that she had concerns about a 10-year blanket exemption for these devices. Mrs. Butcher also noted that some of these devices do not currently contain a meter. The Committee also heard from Mr. Ken Ramsburg (Maryland), who stated that he did not agree with a blanket exemption.

After consideration of this item, the Committee recommends that this item be given Developing status and assigned to the national work group.

At the 2020 NEWMA Interim Meeting, the Committee agreed with comments heard from the body that this proposal is unclear and a blanket exemption for certain devices in the same category would be contrary to the NCWM mandate to create equity in the market place and could create a competitive edge against other fuels or competing devices. Additionally, the ten-year exemption in an evolving technological field is not appropriate. Some suggestions were heard that the proposal could conflict with User Requirements and allow a generation of devices to be used for ten years without compliance. Therefore, the Committee recommends this proposal be Withdrawn.

At the 2020 CWMA Interim Meeting, the S&T Committee heard numerous comments of concern from regulatory officials on this item. The key issues addressed were the 10-year exemption, the blanket exemption from the EVFS codes, and the competitive advantage this item may present to the industry. We feel this item has merit and feel a more appropriate course of action would be to request exemptions from specific requirements vs. a blanket exemption. We recommend this item move forward as a Developing item.

At the 2021 NEWMA Annual Meeting, Ms. Williams expressed concerns on the lack of clarity of the proposal and what is exempted and why. Conflicts with the general code were outlined. The 10-year exemption on devices from HB44 is not supported. Mr. Jimmy Cassidy (Massachusetts) supports the comments by NIST OWM and recommends withdrawal of the item. No comments were received in support of the item. The NEWMA S&T Committee recommends that the item be Withdrawn.

At the 2021 CWMA Annual Meeting, Ms. Williams provided comments on this item. The item is unclear. The potential lies for an entire generation of device to be exempt from Section 3.40 for entire period of use. Companies have expended money and resources to be compliant and allowing such exemptions create a competitive disadvantage environment in the marketplace. The USNWG will not consider this item until it is reworked by the submitter. Mr.

Charles Stutesman (Kansas) feels this item should be withdrawn as a 10-year exemption not acceptable. NIST Handbook 44, Section 3.40, has been published as a tentative code since 2015 and should be a consideration in the establishment of enforcement dates.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

EVF-21.2 W A.2. Exceptions

Source:

ABB, BTCPower, Electrify America, Edison Electric Institute, EVConnect, EVgo, Greenlots, Rivian, Siemens, Tesla, Tritium

Purpose:

To clarify that this code does not apply to EVSE that are not available for public use.

Item Under Consideration:

Amend NIST Handbook 44, Electric Vehicle Fueling Systems as follows:

A.2. Exceptions. – This code does not apply to:

- (a) The use of any measure or measuring device owned, maintained, and used by a public utility or municipality only in connection with measuring electricity subject to the authority having jurisdiction such as the Public Utilities Commission.
- (b) Electric Vehicle Supply Equipment (EVSEs) used solely for dispensing electrical energy in connection with operations in which the amount dispensed does not affect customer charges or compensation.
- (c) The wholesale delivery of electricity.

(d) EVSE located where access and control is restricted for private use, e.g., EVSE placed at a place of residence, including a multiunit residence, for the use of inhabitants; EVSE at a workplace for the use of employees or workers; and EVSE in locations not open to the general public.

(e) EVSE used exclusively for fleet sales and other price contract sales.

Background/Discussion:

Private access locations such as workplaces or residential charging at multi-unit dwellings should not be subject to commercial weights and measures regulations if a commercial transaction based on volume or quantity is not taking place. While this may already imply via the definitions under NIST HB 44 and commercial transactions, it should be clarified for the EVSE subsection. For instance, an apartment complex may provide tenant charging access that is billed either as part of the rent agreement or submetered via an existing utility bill mechanism. In this instance, there is a pre-defined contract between the landlord and tenant to provide this service and for the tenant to pay for this service. However, this service is not available to the public – i.e. it does not include visitor parking. It would be particularly onerous for a small multi-unit dwelling or even an Airbnb to comply with this requirement and unnecessary given the charging cost could be priced into a contract sale.

The top concern is that the provision may be unnecessary, as EVSE restricted exclusively for non-commercial applications is already exempt from NIST HB 44 standards. That said, industry hates uncertainty. The clarity provided by the revision would provide unequivocal regulatory certainty for potential EVSE owners and operators.

Another concern is that commercial EV charging companies may seek to use the exemption as a loophole to evade enforcement of NIST HB 44 standards. However, the suggested change is drafted with that possibility in mind. All

three use-cases exempted by the revision are non-commercial in nature. Chargers open to the public and/or used for commercial transactions would still be subject to regulation.

The submitter requested voting status for this item in 2021.

During the Committee's Open Hearings at the 2021 NCWM Interim meeting, the Committee heard from Mr. Samuel Ferris (California), who expressed issues with the language of the proposal and suggested that the item be withdrawn. Mr. Brad Juhasz (AFTA) expressed support for this item. Mr. Kevin Miller (Charge Point) expressed concerns with this item and suggested that this item be withdrawn. Mr. Ferris supported the NIST OWM analysis of this item. Ms. Diane Lee (NIST OWM) reviewed some of the points addressed in the NIST OWM analysis.

During the Committee's work session, the Committee decided to withdraw this item and expressed concerns with providing an exemption from the entire NIST HB 44 code to devices that provide commercial transactions.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2020 WWMA Annual Meeting, Mr. Kurt Floren (Los Angeles County, California) commented his concerns regarding exceptions when charges are being imposed when private installations are later opening up to the general public. Initially they may fall under the exception but if they change their position from a private to a public site, how would this be addressed? Mr. Floren suggested the proposal be clarified. A blanket exemption is not sufficient. Thought needs to be given to devices falling under the exception may not be appropriate nationwide. Mr. Jeremy Whaling (EVgo) commented in response to Mr. Floren that if a business went from private to public their devices would have to comply. Mr. Juhasz commented that most charging ports are level 2 charging sites. The goal is to avoid unnecessary costs to participants in controlled applications. Fleet sales and contract sales are common in private work and living spaces and the interest to the general public is not in play. Mr. Matthew Douglas (California) concurred with Mr. Floren's concerns and added that Section 21.2, A.2.(e), be amended to stay under jurisdictional regulation. Mrs. Tina Butcher (NIST OWM) commented, if the device is being used commercially, NIST Handbook 44 applications will apply. The general approach to NIST HB 44 is consumers and businesses expect to see the amount, cost and final amount the device charges. Fleet and contract sales are common exceptions throughout NIST HB 44. The current proposal is an exception to all the requirements. A better method is to identify solutions where they may not comply with current code. Rather than allow a blanket exception, it may be better to pinpoint areas where exceptions need to be addressed. Mrs. Butcher also commented that the USNWG on EVF fueling discussed these items and did not reach a consensus. There was considerable debate on this issue. If a device is not being used commercially it's not covered by NIST HB 44. Comment on exceptions: Consumers and businesses expect to determine how much they receive and pay. The transactional info still needs to be provided but how it is provided may be different. Fleet sales for example do not need to show pricing because that has already been agreed upon maybe through a contract. Maybe identify those code sections where compliance needs to be met. Rather than give a blanket exception, consider whether specific points can be given exceptions. Mr. Kevin Schnepf (California) Fleet sale accuracy needs to be clarified noncommercial and non-public can easily become public. Mr. Schnepf also expressed concern with the blanket exclusion regarding multiunit residences. Mr. Mahesh Albuquerque (Colorado) added all comments are good, but he still recommends moving forward. Additionally, Mr. Albuquerque would like to harmonize all the dates. Ms. Francesca Wahl (Tesla) clarified the blanket exception was chosen because it was straight forward but realizes it may need to be more specific. They are open to working on this moving forward.

The Committee agrees and recommends this item be assigned a Developing status. The Committee also recommends the submitter continue to work with their stakeholders and jurisdictions to develop the item.

At the 2020 SWMA 2020 Annual Meeting the Committee heard from Mr. Ken Ramsburg (Maryland) who stated that D and E needed further development. Mr. Ramsburg stated that he had no issue with home chargers being considered non-commercial, but not the entire designation of "non-public" stations, such as those at workplaces. Mr. Ramsburg also stated that he does not support the exception for stations used in contract sales, as that exemption does not exist for petroleum fueling stations. The Committee also heard from Mrs. Butcher, who stated that she agrees with Mr. Ramsburg. Mrs. Butcher also stated that if these devices are not commercial, then this statement is not needed, as

NIST Handbook 44 is for the regulation of commercial devices. Mrs. Butcher also clarified that although exceptions can exist, such as those for fleet sales, the device is still considered commercial.

After consideration of this item the Committee recommends that it be Withdrawn.

At the 2020 NEWMA Interim Meeting, the Committee agrees with the members that this proposal has no merit and should be considered a Withdrawn Item. During the open hearings, the Committee heard multiple comments that the proposal was too vague and allowed for instances where devices used in commerce would be exempted from testing. All commercial weighing and measuring devices are subject to NIST HB 44 regulations and non-public devices can still be used commercially. The national work group could not come to a consensus on this item.

At the 2020 CWMA Interim Meeting, the Committee heard a number of concerns from regulatory officials about a blanket exemption from the EVFS code for EVSE devices located at a multi-unit residence, workplace, or other locations not open to the public. Concerns were also heard from regulatory officials about a blanket exemption for EVSE devices used exclusively for fleet sales and other price contract sales. The CWMA felt this issue is likely already covered by G-A.1. paragraph (a) and recommended this Item be Withdrawn.

EVF-21.3 W S.1.2. EVSE Indicating Elements, S.2.4.1. Unit Price, S.2.5. EVSE Money-Value Computations., S.2.7. Indication of Delivery

Source:

ABB, BTCPower, Electrify America, Edison Electric Institute, EVConnect, EVgo, Greenlots, Rivian, Siemens, Tesla, Tritium

Purpose:

To provide clarity regarding the options available for the primary indicating element that can be utilized to display commercial transactions for EVSE to the consumer and utilized during the inspection of the measurement system for EVSE.

Item Under Consideration:

Amend NIST Handbook 44, Electric Vehicle Fueling Systems as follows:

S.1.2. EVSE Indicating Elements. – An EVSE used to charge electric vehicles shall include an indicating element that accumulates continuously and displays, for a minimum of 15 seconds at the activation by the user and at the start and end of the transaction, the correct measurement results relative to quantity and total price. Indications shall be clear, definite, accurate, and easily read under normal conditions of operation of the device. All indications and representations of electricity sold shall be clearly identified and separate from other timebased fees indicated by an EVSE that is used for both the sale of electricity as vehicle fuel and the sale of other separate time-based services (e.g., vehicle parking). **The primary indicating element shall be provided using one or more of the means listed below:**

(a) A display device which is integral or adjacent to the EVSE.

(b) A device equipped with the means to establish a secure connection to a personal remote/mobile device for display purposes.

(1) The secure connection may be established via wired or wireless means.

(2) A personal remote/mobile device includes, but is not limited to a smartphone (cell phone), tablet, or laptop computer equipped with a digital display.

(3) All measuring, indicating and recording elements used in an electric vehicle fueling system shall operate normally while the display application is running on the remote/mobile device.

- (4) The display application running on the remote/personal device shall be freely available and must allow for unannounced inspections by weights and measures officials.

S.1.2.1.(c) Multiple EVSEs Associated with a Single Indicating Element. – A system with a single indicating element for two or more EVSEs shall be provided with means to display information from the individual EVSE(s) selected or displayed, and shall be provided with an automatic means to indicate clearly and definitely which EVSE is associated with the displayed information.

...

S.2.4.1. Unit Price. – An EVSE shall be able to indicate on each face the unit price at which the EVSE is set to compute or to dispense at any point in time during a transaction.

The indication of the unit price shall be provided via the primary indicating element shall be provided using one or more of the means listed below:

- (a) A display device which is integral or adjacent to the EVSE.
- (b) A device equipped with the means to establish a secure connection to a personal remote/mobile device for display purposes.
 - (1) The secure connection may be established via wired or wireless means.
 - (2) A personal remote/mobile device includes, but is not limited to a smartphone (cell phone), tablet, or laptop computer equipped with a digital display.
 - (3) All measuring, indicating and recording elements used in an electric vehicle fueling system shall operate normally while the display application is running on the remote/mobile device.
 - (4) The display application running on the remote/personal device shall be freely available and must allow for unannounced inspections by weights and measures officials.

S.1.2.1.(c) Multiple EVSEs Associated with a Single Indicating Element. – A system with a single indicating element for two or more EVSEs shall be provided with means to display information from the individual EVSE(s) selected or displayed, and shall be provided with an automatic means to indicate clearly and definitely which EVSE is associated with the displayed information.

...

S.2.5. EVSE Money-Value Computations. – An EVSE shall indicate via the primary indicating element the total sales price at any single purchase unit price for which the electrical energy being measured is offered for sale at any delivery possible within either the measurement range of the EVSE or the range of the computing elements whichever is less.

The primary indicating element shall be provided using one or more of the means listed below:

- (a) A display device which is integral or adjacent to the EVSE.
- (b) A device equipped with the means to establish a secure connection to a personal remote/mobile device for display purposes.

S.1.2.1.(c) Multiple EVSEs Associated with a Single Indicating Element. – A system with a single indicating element for two or more EVSEs shall be provided with means to display information from the

individual EVSE(s) selected or displayed, and shall be provided with an automatic means to indicate clearly and definitely which EVSE is associated with the displayed information.

...

S.2.7. Indication of Delivery. – The EVSE shall automatically show ~~on its face~~ –the initial zero condition and the quantity delivered (up to the capacity of the indicating elements) via the primary indicating element.

The primary indicating element shall be provided using one or more of the means listed below:

(a) A display device which is integral or adjacent to the EVSE.

(b) A device equipped with the means to establish a secure connection to a personal remote/mobile device for display purposes.

S.4.2.4.(c) Multiple EVSEs Associated with a Single Indicating Element. – A system with a single indicating element for two or more EVSEs shall be provided with means to display information from the individual EVSE(s) selected or displayed, and shall be provided with an automatic means to indicate clearly and definitely which EVSE is associated with the displayed information

Background/Discussion:

Technology continues to evolve and more consistently, personal devices are being utilized to display information to consumers regarding commercial transactions whether via transportation network companies or parking meters. It is being recognized that metering systems can be integrated into the technology to ensure the accuracy of the transaction but that the way that information is displayed to the consumer is not directly integrated into the metering system. Under the current language in NIST Handbook 44, the definition of “face” provides some level of flexibility as it states that “in the case of some electronic displays, this may not be an integral part of the pump or dispenser.” We, however, recommend supplementing the flexibility provided in this language with a clear indication that an electronic remote display can be utilized to meet the primary indicating element requirements for EV charging stations. This electronic remote display could be provided via mobile application, a centralized kiosk, or a vehicle user interface. There is precedent for utilizing a mobile application under NIST HB 44, Sec 5.6 for transportation network companies. Charging an EV is a fundamentally different consumer experience than refueling a traditional gas-powered automobile. Where a gas pump can complete a fill-up in a matter of minutes, a charging session can range anywhere from a few minutes to several hours, depending on vehicle type, charging need, and charging power level for direct current fast charging (DCFC) or Level 2. Often, consumers plug in their vehicle and return when the charging session has been completed. The function of a display on the EVSE can be accomplished through the vehicle user interface (UI) and/or through a mobile app, enabling greater reliability and accessibility to the display of information. It is most important to identify the information to be provided to the consumer, require that the EVSE operators provide live session information, and allow for the consumer market to determine which form of communication is most suitable to meet the consumers’ needs, which is increasingly demonstrated to be moving toward personal devices. This would allow companies to innovate new and cost-effective ways of providing information regarding charging sessions including utilizing mobile-app displays as well as in-vehicle displays. Globally, regulators are evaluating measurement needs for EVSE and several countries have already indicated a willingness to utilize a remote display as the primary indicating element. In Germany, via the VDE standard, regulators have enabled a remote display or user interface for compliance so long as the user is receiving the information instantaneously, securely and accurately. The VDE standards can be accessed at www.vde-verlag.de/standards/1400304/e-vde-ar-e-2418-3-100-anwendungsregel-2018-07.html.

One concern for the mobile app electronic remote display option that may be raised is the security and accuracy of the information on the mobile app and that it matches the meter output data. If there is a physical connection to the meter, plus secure means of wirelessly communicating metering/billing data to the consumer or field inspector, you can verify accuracy securely/confidently via mobile application without needing a screen on the EVSE. The external display has to be correctly registered in the meter to be able to operate securely. To do so, the public key of the display has to be stored in the meter during assembling process, and this “pairing” process is registered in the metrology log. When meter is using an external display, a charging process can only be started, if the presence, the availability and authenticity of the external display can be verified. The meter signs a list of mandatory metrology registers and an

additional set of general metering registers that can be configured during assembly process. These registers are available for transmission as data element to the external Display.

For instance, to verify the information the metering device can have the ability to cryptographically sign every energy reading using a unique digital certificate. Field inspection can then allow for remote validation of digital signatures for each meter reading. Digital signatures can be inspected while connected to the meter directly when performing field validation as well while validating billing records stored remotely i.e., every energy reading that is being billed can be verified to be legitimate. Furthermore, field inspectors could utilize an optical interface to compare the readings of metering data to the displayed data, previously electronically signed and transmitted wirelessly over a secured private network channel to the mobile application without needing a display on the EVSE.

Another concern that may come up is that the operation of certain types of electronic communication in locations such as parking garages and the need for communication to work during an inspection. Utilizing alternate means to establish a secure connection such as local Wi-Fi or Bluetooth, provisions can be put in place to ensure the inspector is able to view the required information with a remote display device during inspection.

There may also be some confusion or concern regarding consumers having to download different apps in order to view the transaction. Consumers already usually choose a few apps for regular use based on the EVSE network they utilize most frequently. For some operators, this information may also be integrated in the vehicle use interface as a closed loop system. It should be noted that the display of the measurement information for the commercial transaction should not be confused with payment systems utilized by the consumer. The type of payment systems available to the consumer are separate from NIST HB 44 Sec 3.4 measurement transaction requirements and should not be conflated.

The submitters requested voting status for this item in 2021.

During the Committee's Open Hearings at the 2021 NCWM Interim Meeting, the Committee heard from Mr. Samuel Ferris (California), who suggested that the item be withdrawn. Mr. Brad Juhasz (AFTA) expressed support for this item and recommended a Developing status for this item. Mr. Kevin Miller (Charge Point) recommended that this item be withdrawn. Mrs. Tina Butcher (NIST OWM) highlighted some of the concerns that NIST OWM expressed in their analysis.

During the Committee's work session, the Committee agreed that the item be Withdrawn.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2020 WWMA Annual Meeting, Ms. Francesca Wahl (Tesla), Mr. Jeremy Whaling (EVgo), and Mr. Brad Juhasz (EVConnect) commented that there is confusion as to where the primary indicator should be located. Technology is rapidly changing, and the movement is towards different formats. This addresses the ability to have the display on mobile devices. Looking at this issue as a global issue rather than U.S. transportation companies. Most customers exit the vehicle while charging and want to be informed real time as to the charging process. Mr. Matthew Douglas (California) stated the indicator should not be a burden to the consumer. The indicating element should be part of the device. If they want additional displays that are appropriate, that's okay, but the primary indicator should be part of the device. Ms. Juana Williams (NIST OWM) submitted written comment after open hearings and will be posted on the WWMA website. The Committee agrees and recommends this item be assigned a Developing status.

The Committee also recommends the submitter continue to work with their stakeholders and jurisdictions to develop the item. The Committee further recommends the submitter revise the item to make the primary indicating element be an integral part of the device with any other indicating elements being secondary.

At the 2020 SWMA Annual Meeting, the Committee heard from Ms. Wahl, who stated that the car dash screen or customer's device would be used as the indicator. The Committee has concerns about relying on the customer's

device as the only indicator, and issues that could present for the inspection procedure. After considering this item, the Committee recommends that it be given Developing status and developed further by the USNWG.

At the 2020 NEWMA Interim Meeting, the Committee agreed with members that this item has merit, but due to the emerging technology, more analysis is needed. There are also concerns that charging stations do not have indicators and different vehicle indicators or apps may not be equally effective as measuring tools. Therefore, the Committee recommends this proposal to be considered a Developing item. A comment was heard that the USNWG anticipates the display will be app-based but has concerns with specific language of open-ended device/display types, such as vehicle user interfaces which may not be as well developed.

At the 2020 CWMA Interim Meeting, the S&T Committee heard several concerns on this item from regulatory officials. Some of the concerns dealt with the availability of access to the apps/integrated vehicle display at the time of inspection or following up on a consumer complaint. Another concern is the security of the communication between the device and the display. These devices may need to be submitted to NTEP for type evaluation similar to POS systems and software used to generate scale tickets even if they are not the primary indicating element. We feel this item has merit and recommend this item move forward as a Developing item.

EVF-21.4. V S.3.3. Provision for Sealing

(This item was adopted.)

Source:

NIST Office of Weights and Measures

Purpose:

In lieu of an electric vehicle fueling system providing a printed copy of its audit trail event records, it should be permissible for those systems that feature either a Category 2 or Category 3 method of sealing metrological features to provide that information in an electronic format during an inspection by weights and measures officials.

Item Under Consideration:

Amend NIST Handbook 44, Electric Vehicle Fueling Systems as follows:

S.3.3. Provision for Sealing. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. Devices and Systems Adjusted Using Removable Digital Storage Devices. For parameters adjusted using other means, the following applies.

Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or physically applying security seals in such a manner that no adjustment can be made of:

- (a) each individual measurement element;
- (b) any adjustable element for controlling voltage or current when such control tends to affect the accuracy of deliveries;
- (c) any adjustment mechanism that corrects or compensates for energy loss between the system and vehicle connection; and
- (d) any metrological parameter that detrimentally affects the metrological integrity of the EVSE or system.

When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal. Audit trails shall use the format set forth in Table S.3.3. Categories of Device and Methods of Sealing.

(Amended 2019)

Table S.3.3. Categories of Device and Methods of Sealing	
Categories of Device	Method of Sealing
Category 1: No remote configuration capability.	Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.
Category 2: Remote configuration capability, but access is controlled by physical hardware. The device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode or shall not operate while in this mode.	The hardware enabling access for remote communication must be on-site. The hardware must be sealed using a physical seal or an event counter for calibration parameters and an event counter for configuration parameters. The event counters may be located either at the individual measuring EVSE or at the system controller; however, an adequate number of counters must be provided to monitor the calibration and configuration parameters of the individual EVSEs at a location. If the counters are located in the system controller rather than at the individual EVSE, means must be provided to generate a hard copy of the information through an on-site device; <u>this information may be provided electronically in lieu of or in addition to a hard copy at the time of inspection.</u>
Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password). The device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode or shall not operate while in this mode.	An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter. A printed copy of the information must be available through the EVSE or through another on-site device. <u>The event logger information may be provided electronically in lieu of or in addition to a hard copy at the time of inspection, provided the event logger information is retained in the system for future reference.</u> The event logger shall have a capacity to retain records equal to 10 times the number of sealable parameters in the EVSE, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)

(Amended 2021)

Background/Discussion:

Requiring EVSE operators to provide printed audit trail event information at each location, as is prescribed in Table S.3.3. becomes unduly onerous without providing any commensurate benefit that could not be met by digital means. Most EVSE operators do not employ staff at EVSE stations, so housing printer materials on site and ensuring their replenishment is not reasonable. Devices shall be designed so that inspectors are able to easily access audit trail event records in a usable format. Weights and measures officials could ensure that the intent of this requirement is met through a specification included in Table S.3.3. that requires event information be made available at the time of inspection so that an official needing to make enforcement decisions can do so irrespective of whether an EVSE provides those records in digital or hard copy format.

On August 10, 2020, the Electric Vehicle Fueling Equipment (EVFE) Subgroup, which is part of the USNWG EVF&S, agreed the proposal should move forward for adoption in 2021. The EVFE Subgroup plans to continue its work to refine and fully develop legal metrology requirements and test procedures for EVSEs.

The submitter requested Voting status for this item in 2021.

During the Committees Open Hearings at the 2021 NCWM Interim Meeting, the Committee heard from Mrs. Tina Butcher (NIST OWM), who provided an update on the NIST OWM analysis of this item. Mr. Samuel Ferris (California) recommended a Voting status for this item. Mr. Keith Bradley (Electrify America) recommended a Voting status for this item. Mr. Kevin Miller (Charge Point) recommended a Voting status for this item.

During the Committees work session, the Committee supported this item and agreed to a Voting status for this item.

During the 2021 Annual Meeting, the Committee heard comments in support of this item. Ms. Juana Williams (NIST OWM) provided NIST OWM technical comments.

During the Committee's open hearings, the Committee noted that they only heard comments in support of this item and agreed to a Voting status for this item.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2020 WWMA Annual Meeting, Mr. Kevin Schnepf (California) commented that California is in support of this item. It recognizes the changes of tech and will not have to add any costs of having a physical printer on the device. Mrs. Butcher commented that this item originated from the national working subgroup. This is a desire to move to alternative formats. The group recognizes this is the way of the future. It also recognizes these types of installations do not have people on site. W&M inspectors may be impeded during their inspection. The General Code allows the owner to assist. Mr. Mahesh Albuquerque (Colorado) supports this item.

The Committee agrees the item is fully developed and recommends assigning this item a Voting status.

At the 2020 SWMA Annual Meeting, the Committee heard from Mr. Alan Walker (Florida), who asked for clarification on sealing these devices. The Committee also heard from Ms. Diane Lee (OWM), who stated that NIST supported moving this forward as a Voting Item. Ms. Lee also stated that the Subgroup consensus was to permit an electronic event log.

After considering this item, the Committee recommends the item move forward as a Voting Item.

At the 2020 NEWMA Interim Meeting, the Committee agrees with the body that this proposal be considered a Voting Item. This item was submitted by NIST on behalf of the national work group, which believed it was fully developed and ready to be voted on. There is some concern that the electronic logger may provide an imposition for W&M inspectors who do not have a smart phone/laptop/internet service, but the User Requirement of assistance from the device owner should resolve any concerns. LMD 21.1 has a similar proposal and should have language aligned for the sake of consistency.

At the 2020 CWMA 2020 Interim Meeting, the only comments heard on this item were from Mrs. Butcher. Mrs. Butcher advised that this item has come out of the work of the USNWG EVF&S and is fully developed and recommended this item for Voting status. The Committee agrees.

EVF-21.5 D T.2. Load Test Tolerances.

Source:

ABB, BTCPower, Electrify America, Edison Electric Institute, EVConnect, EVgo, Greenlots, Rivian, Siemens, Tesla, Tritium

Purpose:

To create separate metering requirements for DC EVSE due to significant technology differences and challenges between AC and DC systems.

Item Under Consideration:

Amend NIST Handbook 44, Electric Vehicle Fueling Systems as follows:

T.2. Load Test Tolerances.

T.2.1. AC EVSE Load Test Tolerances. – The tolerances for AC EVSE load tests are:

- (a) Acceptance Tolerance: 1.0 %; and
- (b) Maintenance Tolerance: 2.0 %.

T.2.2. DC EVSE Load Test Tolerances. – **The tolerances for DC EVSE load tests:**

(a) Devices installed prior to January 1, 2033

(1) Acceptance Tolerance: 2.5 %; and

(2) Maintenance Tolerance: 5.0 %

(b) Devices installed January 1, 2033 or later

(1) Acceptance Tolerance: 1.0 %; and

(2) Maintenance Tolerance: 2.0 %

Background/Discussion:

The proposed changes to the text are to differentiate alternating current (AC) EVSE from direct current (DC) EVSE. Metering for DC architected systems is considerably more complicated and in ways that the original drafting of this provision never contemplated. For example, the tentative code when initially written never contemplated 350kW EVSE or liquid cooled cabling from the charging post to the connector. As such, it is necessary to separate the implementation dates of some of the specifications, tolerances, and other technical requirements. DC metering solutions are still being researched and developed and are not yet commercially available to be integrated into DC chargers at scale and at reasonable cost. While the supply chain for the physical meters themselves is slowly catching up, the metering system in a DC EVSE, particularly high-power DC EVSE that utilize liquid-cooled cables, goes beyond the physical meter itself which is incorporated in the main housing of the EVSE. For example, measurements may also need to be taken at the connector end of the dispenser and software and algorithms must be developed, validated, and integrated into the EVSE system to allow for accurate metering of kWh delivered to the vehicle. Implementing more complex metering systems needed for DCFC requires significant design and manufacturing changes to DC EVSE.

The proposed tolerances account for the fact that these systems are still in development and are untested. The proposed timeline provides the industry with enough time to develop, test, validate, and deploy reliable DC metering system technology. This timeline is also consistent with the timeline approved by the State of California which accounts for the vast majority of the EVSE market. EVSE manufacturers are working diligently to meet the California timeline and are confident that it can be met.

While it is important to ensure that consumers are receiving accurate and transparent information regarding the accuracy of EV charging stations, it is also important that the technology to deliver high accuracy is available and reliable.

There is concern about both the proposed timeline and the accuracy requirement. Some are concerned that the accuracy specification of 2.5 % acceptance and 5 % maintenance is too high and does not provide sufficient consumer confidence that all charge sessions are equal regardless of provider and station. The proposers would note that this is a new and evolving technology where charging providers place a premium on customer experience as they compete for this growing market. Thus far, customers have not registered complaints about lack of transparency. Some are concerned that the timeline for instituting a metering regime is too far into the future. The proposers acknowledge the few years it will take to have reliable DC metering systems commercially available at scale but are working as quickly as possible to develop and integrate these systems into their chargers. Some are also concerned that the metering requirements have been in a place for several years already and therefore the EVSE community should not need more years to develop solutions. The proposers note that current DC EVSE technology was never contemplated by the existing metering regime and DC technology, particularly high-power DC EVSE, were not in existence at the time the original specifications were set. For example, the first 350kWh EVSE with liquid cooled cables weren't deployed in the US until 2018.

The submitter requested voting status for this item in 2021.

During the Committees Open Hearings, at the 2021 NCWM Interim Meeting, the Committee heard from Mr. Michael Krauthamer (AFTE), who supports this item and recommended a Developing Status. Mr. Keith Bradley (Electrify America) recommended a Developing status for this item. Mr. Samuel Ferris (California) recommended a Developing status for this item. Mr. Kevin Miller (Charge Point) recommended that this item be Withdrawn and noted that his devices meet the tolerance in NIST HB 44.

During the Committees work session, the Committee agreed to a Developing status for this item.

At the 2021 Annual Meeting Open Hearings, the developers of this item supported a Developing status for this item.

During the Committee's work session, the Committee agreed to a Developing status for this item.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2020 WWMA Annual Meeting, a presentation by Tesla, EVConnect, and EVgo was given in which a slide spoke to this item stating the need to separate the requirements for AC and DC systems. Extending the tolerances based on the extension of time allowing time for higher accuracy phase in. Mr. Kevin Schnepf (California) believes the phase in for tighter tolerances may be too long. Accuracy will become a greater issue as this becomes more prevalent. Clarification needs to be made to the submitters' references to "public access"; California deals with commercial use. The term "public access" should be changed to "commercial use". Also, with technology changing so rapidly, a 13-year phase in period is too long. Mr. Kurt Floren (Los Angeles County, California) agrees with Mr. Miller's comments. Mrs. Tina Butcher (NIST OWM) agrees with Mr. Miller and stated that consumers generally expect the tolerances to be the same and recommended looking at a shorter period of time to avoid consumer confusion.

The Committee agrees and recommends this item be assigned a Developing status. The Committee also recommends the submitter continue to work with their stakeholders and jurisdictions to develop the item. The Committee further recommends the submitter provides additional data beyond their original justification to support the necessity for two separate tolerances.

At the 2020 SWMA Annual Meeting, the Committee heard from Mr. Ken Ramsburg (Maryland), who stated that he would like real world data before determining the tolerances. Mr. Ramsburg also stated that the proposed tolerance is more than double the current tolerance.

After considering this item, the Committee recommends this item be given Developing status and be developed further by the USNWG.

At the 2020 NEWMA Interim Meeting, the Committee agrees with the body that this item has no merit as there is lack of data. The Committee recommends that the proposal be Withdrawn. During open hearings, the Committee heard comments that the national work group could not come to a consensus on this item. There are concerns that consumers would be unaware of different devices in the same category operating on different tolerances. More data needs to be offered to show accuracy capabilities. Tolerance parameters set until 2033 is too distant for this fast-paced technological field that is rapidly changing.

At the 2020 CWMA Interim Meeting, the S&T Committee heard concerns from regulatory officials that this item does not have a sunset date, so devices installed prior to January 1, 2033, would be allowed a higher tolerance for the life of those devices. The Committee also heard comments that a limited amount of data was available to support the higher tolerances. We feel that this item has merit and recommend it move forward with a Developing status.

At the 2021 NEWMA Annual Meeting, Ms. Juana Williams (NIST OWM) shared NIST comments on this item and concerns on relaxing tolerances if existing devices in the marketplace are already meeting tolerances. If there are specific technical issues that justify the tolerances proposed, industry has not provided data in support. No sunset date was provided and devices with dual tolerances will not be distinguishable from each other. Mr. Lou Sakin (Massachusetts) questioned the rhyme or reason behind a 2033 date for the change in device tolerance. Mr. Jim Willis (New York) commented that there is currently no available test equipment to verify the need for relaxed tolerances on DC systems. The NEWMA S&T Committee recommends that the item be Withdrawn.

At the 2021 CWMA Annual Meeting, Ms. Williams provided background and technical information on this item. The question was raised about the number of DC devices versus the number of AC devices currently in the marketplace. Can the DC devices already in the marketplace meet the current tolerances? A marking on the device indicating the dual tolerance use be on the dispenser. The proposal needs to have a “sunset” date for the higher tolerances. Mr. Charles Stutesman (Kansas) believes this item should be withdrawn as it provides too long of a time period before devices have to comply. The CWMA S&T Committee recommends that this item be Withdrawn.

EVF-21.6 V Definitions: minimum measured quantity (MMQ)

(This item was adopted.)

(**NOTE:** This item includes an editorial change to correct the location of the definition in NIST HB 44.)

Source:

NIST Office of Weights and Measures

Purpose:

Include the term “minimum measured quantity (MMQ)” in the NIST Handbook 44 Section 3.40 Electric Vehicle Fueling Systems –Tentative Code Definitions. The term has special meaning for these systems and is missing from the code’s definitions. The term is applicable to these systems because it is a unique marking requirement and its value is used in the determination of test loads and tolerances.

Item Under Consideration:

Amend NIST Handbook 44, Section 3.40 as follows:

minimum measured quantity (MMQ). – The smallest quantity delivered for which the measurement is to within the applicable tolerances for that system. [3.37, 3.39, 3.40]

Background/Discussion:

The current NIST Handbook 44 Appendix D - Definitions define the term “minimum measured quantity (MMQ).” The MMQ represents the smallest quantity at which the manufacturer declares a system is suitable for a delivery and will remain in compliance. The term MMQ appears in the requirements in only three NIST HB 44 codes (3.37, 3.39, and 3.40).

In 2014 the U.S. National Work Group (USNWG) on Electric Vehicle Fueling and Submetering (EVF&S) developing NIST HB 44 Section 3.40 EVFS-Tentative Code inadvertently omitted the term MMQ from the code's Definitions. The MMQ is required marking information on these systems and the official uses the MMQ value in the determination of test loads and tolerances. MMQ has a special meaning for electric vehicle fueling systems (EVFS) and is cited eleven times in the following Section 3.40 code paragraphs: S.4.2. Directional Control; S.5.2. (d) EVSE Identification and Marking Requirements; S.8. Minimum Measured Quantity (MMQ); N.3. Minimum Test Draft (Size); N.5.2. Accuracy Testing (AC and DC Systems); and T.4. Tolerance Application in Type Evaluation Examinations for EVSEs. To remedy the omission of the term in the Appendix D Definitions for Section 3.40 and to clarify the term is also applicable to EVFSs the definition of MMQ should be included in the code's appendix and the brackets include the code section's numerical designation 3.40.

On August 10, 2020, the Electric Vehicle Fueling Equipment Subgroup, which is part of the USNWG EVF&S, agreed the proposal should move forward for adoption in 2021.

This proposal is a housekeeping item correcting the omission of a definition for the term "minimum measured quantity" that should have appeared in NIST HB 44 Section 3.40 EVFS-Tentative Code when the code was first published in 2016. The EVFS code has tentative status and to date no equipment has undergone the type evaluation process. It is anticipated there will be slight modifications to this code's requirements and test procedures to address various generations of equipment, design configurations, and business models in the marketplace. At some point it is even possible that further parameters will be developed to simplify the process for establishing an appropriate value for the MMQ for all types of EVFSs over a wide range of power capacities. For now, the MMQ currently cited in the EVFS design, test notes, and tolerance requirements in Section 3.40 should be clearly defined for these systems.

The submitter requested voting status for this item in 2021.

During the Committee Open Hearings at the 2021 NCWM Annual Meeting, the Committee heard comment from Mrs. Tina Butcher (NIST OWM), who provided comments included in the NIST OWM analysis. Mrs. Butcher also noted that there is an editorial correction needed to the sentence that follows the Item Under Consideration. The correction that should be made to the sentence is included below:

Amend NIST Handbook 44, Section 3.40. ~~Appendix D. Definitions~~ as follows:

Mrs. Butcher explained that NIST HB 44 Section 3.40. is a tentative code and the definitions are included in the specific code until the code becomes permanent.

During the Committee's work session, the Committee agreed to make the editorial correction noted by Mrs. Butcher and present the item as shown in Item Under Consideration for vote.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2020 WWMA Annual Meeting, Mrs. Butcher commented, they think it's a housekeeping item, not technically substantial. There has been some discussion in the national working group as to whether the MMQ is relevant. But this is only dealing with the definition.

The Committee agrees this item is fully developed and recommends a Voting status. The Committee noted that an editorial correction needs to be made removing the word "to".

At the 2020 SWMA 2020 Annual Meeting, the Committee heard from Ms. Diane Lee (NIST OWM), who stated that NIST supported moving this item forward as a Voting item.

After considering this item, the Committee recommends that it be given Developing Status and be developed further by the USNWG.

At the 2020 NEWMA Interim Meeting, the Committee agrees with the body that this proposal should be considered a Voting Item. This item was submitted by NIST and supported by the national work group. There is an error in the agenda and the item under consideration should read section 3.40, not Appendix D. This item duplicates the definition in Appendix D and provides a needed definition for a term being used (MMQ) within the tentative code. The item received no opposition during the open hearing.

At the CWMA 2020 Interim Meeting, the only comments received by the S&T Committee were from Mrs. Butcher. Mrs. Butcher explained that this item is to correct an inadvertent omission to the EVFS code. Mrs. Butcher also advised that the submitted item should be changed as follows to add this definition to the EVFS code and not Appendix D.

Item Under Consideration:

Amend NIST Handbook 44 NIST, Section 3.40. Definitions as follows:

minimum measured quantity (MMQ). – The smallest quantity delivered for which the measurement is to within the applicable tolerances for that system. [3.37, 3.39, 3.40]

We feel that this item is fully developed with the change made above and recommend this item move forward as a Voting item.

TIM - TIMING DEVICES CODE

TIM-20.1 V S.1.1.3. Value of Smallest Unit.

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert's Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

(NOTE: At the 2020 NCWM Annual meeting, the Committee agreed to add a small editorial change to the item under consideration. A space was added between “~~of~~” and “following”.)

Source:

NIST OWM

Purpose:

Establish a suitable limit for the maximum value of the quantity division for indicated and recorded time-based or related services delivered through electric vehicle fueling systems.

Item Under Consideration:

Amend NIST Handbook 44, Electric Vehicle Fueling Systems follows:

S.1.1.3. Value of Smallest Unit. – The value of the smallest unit of indicated time and recorded time, if the device is equipped to record, shall not exceed the ~~equivalent of~~ **following**:

- (a) **For parking meters:**

(1) one-half hour on parking meters indicating time in excess of two hours; ~~or~~

(2)(b)—six minutes on parking meters indicating time in excess of one but not greater than two hours; ~~or~~

(b) **For an EVSE equipped with integral time-based feature:**

(1) one minute on an EVSE indicating time not greater than or equal to 60 minutes, or

(2) hours and minutes on an EVSE indicating time intervals in excess of 60 minutes;

(c) **For all other devices** five minutes ~~on all other devices~~, except those equipped with an in-service light.

(Amended 1975 **and 2021**)

Background/Discussion:

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Mrs. Tina Butcher
NIST Office of Weights and Measures
(301) 975-2196, tina.butcher@nist.gov

In 2015, modifications were made to NIST Handbook 44 Section 5.55 Timing Devices to address an electric vehicle fueling system (EVFS) capable of applying additional fees for time-based services. However, no limits were placed on the value of the smallest unit of indicated time and recorded time in the equipment's design requirements.

Charging sessions will vary from twenty minutes to twelve hours depending on the capacity of the electric vehicle and EVFS. An EVFS must also make available in either printed or electronic format complete and clearly defined transaction information about the start and stop time of a service, power loss event, or rate change. This transaction information for time intervals must be available in values or increments that ensure transparency when displayed or recorded and allow for straight forward value comparison of services in the calculation of fees.

Current Timing Devices Code paragraph S.1.1.3 Value of Smallest Unit specifies the maximum value of increments of time indicated or recorded by a parking meter and other devices such as laundry dryers or car washes that measure time during which services are being dispensed. Since modifications to the code in 2015 did not address the permissible smallest value of the unit of time on EVSEs; this proposed modification of paragraph S.1.1.3. establishes a limit on the unit of time at one minute for time less than or equal to 60 minute and in hours and minutes for time intervals greater than 60 minutes.

NIST Handbook 44 Section 5.55 Timing Devices Code paragraph S.1.1.2 Units specifies that indications and recorded representations of time shall be in terms of minutes for time intervals of 60 minutes and hours and minutes for time intervals greater than 60 minutes. Paragraph S.1.1.2 does not specify what a suitable *maximum* value of the quantity division for EVSE time-based indications should be which is necessary given the range in length of a charging session can be 20 minutes to 12 hours and for additional time-based fees (such as idling after a full charge) that can also vary and might be assessed in conjunction with the electrical energy delivery. Consequently, a proposal to modify paragraph S.1.1.3 was developed to include specific requirements that were inadvertently omitted in the 2015 updates to the Timing Devices Code to addresses the EVSE application.

A similar recommendation has been submitted to modify the corresponding EVFS requirement in NIST HB 44 Section 3.40 Electric Vehicle Fueling Systems – Tentative Code paragraph S.1.3.2. EVSE Value of Smallest Unit to specify the maximum permissible value of the indicated and/or recorded electrical energy unit by an EVSE.

During the 2020 NCWM Interim Meeting Open Hearings, the Committee heard from Mrs. Tina Butcher (NIST OWM), who stated that the item is fully developed and that the EVSE work group is in consensus with the proposed changes to establish a limit on the unit of time in the timing device code.

During the Committee's work session, the Committee agreed that this item should be given a Voting status.

During the 2020 NCWM Annual Meeting, which was held in January 2021, the Committee heard comments from Mr. Kurt Floren (Los Angeles County, California) who expressed support for this item and requested clarification. Mr. Steve Harrington (Oregon) provided discussion on this item. Mr. Keith Bradly (Electrify America) provided clarification on the item, and Mrs. Butcher provided an overview of the item. Mr. Samuel Ferris (California) expressed support for this item and echoed the NIST OWM comments.

During the Committee work session, members of the Committee agreed this item should be given a Voting status. The Committee corrected the proposal by adding the needed space made evident by Mrs. Butcher and agreed to present the item for vote as shown in Item Under Consideration.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2019 WWMA Annual Meeting, there were no comments heard during the open hearing session on this item. The Committee agrees that the item is fully developed and should be given a Voting status.

At the 2019 SWMA Annual Meeting, the Committee heard no comments on this item. The Committee decided to not make a recommendation.

At the 2019 NEWMA Interim Meeting, the Committee and the body agree that this item be moved to a voting status. Mr. James Cassidy (Massachusetts) and Mr. Jim Willis (New York) voiced their support.

At the 2019 CWMA Interim Meeting, Mr. Doug Musick (Kansas) commented that it may not be clear when part (b) and (c) apply. We recommend this item move forward as a Developing item.

At the 2020 WWMA Annual Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed.

At the 2020 SWMA Annual Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed.

Regarding the 2020 NEWMA Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the 2020 NEWMA Interim Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed.

Regarding the 2020 CWMA Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the 2020 CWMA Interim Meeting, the S&T Committee heard no comments during open hearings on this item. They felt this item was fully developed and recommend this item move forward as a Voting item.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

GMA - Grain Moisture Meters 5.56 (A)**GMA-19.1 D Table T.2.1. Acceptance and Maintenance Tolerances Air Oven Method for All Grains and Oil Seeds.****Source:**

NTEP Grain Analyzer Sector

Purpose:

Reduce the tolerances for the air oven reference method.

Item Under Consideration:

Amend NIST Handbook 44, Grain Moisture Meter Code 5.56 (a) as follows:

T.2.1. Air Oven Reference Method. – Maintenance and acceptance tolerances shall be as shown in Table T.2.1. Acceptance and Maintenance Tolerances Air Oven Reference Method. Tolerances are expressed as a fraction of the percent moisture content of the official grain sample, together with a minimum tolerance.

(Amended 2001)

Table T.2.1. Acceptance and Maintenance Tolerances Air Oven Reference Method		
Type of Grain, Class, or Seed	Tolerance	Minimum Tolerance
Corn, oats, rice, sorghum, sunflower	0.05 of the percent moisture content	0.8 % in moisture content
All other cereal grains and oil seeds	0.04 of the percent moisture content	0.7 % in moisture content

Table T.2.1. Acceptance and Maintenance Tolerances Air Oven Reference Method for All Grains and Oil Seeds	
<u>Tolerance</u>	<u>Minimum Tolerance</u>
<u>0.03 of the percent moisture content</u>	<u>0.5 % in moisture content</u>

(Amended 2001 and 20XX)**Background/Discussion:**

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Mr. Karl Cunningham
Illinois Department of Agriculture
(217) 785-8301, karl.cunningham@illinois.gov

Samples and list of grains that AMS, FGIS request from states to include in their ongoing calibration program. States and other interested parties wanted to verify that corn samples from their state were included in the calibration data

for NTEP meters because of variations states reported between UGMA meter and other meter technologies on corn samples.

During the 2016 Grain Analyzer Sector Meeting, numerous instances of inconsistent moisture meter measurements involving grain shipments from U.S. interior facilities to U.S. export port facilities were reported. The Sector received a suggestion that if the UGMA can make better measurements, then the Sector should consider reducing the applicable tolerances in NIST HB 44. At the 2016 and 2017 Grain Analyzer Sector meetings, Mr. Charlie Hurburgh (Iowa State University) agreed to chair a GA Sector TG to review the current NIST HB 44 tolerance with both UGMA meters and Non-UGMA meters. During the 2018 meeting, Mr. Hurburgh reported that based on data he analyzed from Iowa State Weights and Measures Grain Inspection reports, UGMA meters read closer to the reference air oven moisture results than non-UGMA meters.

It was also noted during the 2018 NTEP Grain Analyzer Sector meeting that the current tolerances were developed in 1991 and have not been changed to coincide with the change in technology for these devices; and this action is needed for grain industry risk management.

Prior to the 2019 NCWM Interim Meeting, all four regional weights and measures associations agreed to forward the proposal as a voting item on the Interim Agenda. However, following the regional meetings, additional data was submitted to the Sector which indicates a need to consider developing different tolerance for some grain types. Through a subsequent ballot, and a majority vote, the Sector agreed to recommend changing the status of the item to developing to provide the Sector time to consider additional data and changes to its original proposal.

During the 2019 NCWM Interim Meeting, the NCWM S&T Committee heard comments to agenda item GMA-3. Mr. Loren Minnich (Kansas) commented that he spoke with Ms. Diane Lee (NIST OWM), and she reported that one state was concerned with the application of the reduced tolerances to all grain types, specifically grains with hulls or husks. Mr. Minnich suggested that this item be assigned a “Developing” status to allow for more research into this issue. The Committee also received written comments from NIST OWM (see NIST OWM’s Analysis posted on the NCWM website). During the 2019 Interim Meeting, the S&T Committee considered the comments during the opening hearing and comments submitted prior to the meeting and assigned a “Developing” status for this item.

At the 2019 NCWM Annual Meeting, Ms. Lee provided an update on the history of the item. Ms. Lee noted that the GA Sector will review data from Arkansas at its 2019 meeting intended to assure that proposed changes to the tolerances can be applied to all grains. Ms. Lee, speaking on behalf of the Sector, stated that the Developing status assigned to this item is appropriate.

During the 2020 NCWM Interim Meeting Open Hearings, the Committee heard from Ms. Lee, who stated that when this item was initially submitted the GMM Sector agreed to reduce tolerance based on data that was limited to corn and soybeans. Following the review of the initial data, additional data from Long Grain Rough Rice was reviewed and the sector agreed that additional data was needed on other grains to include oats, rice, and barley, prior to changing the tolerances. Ms. Lee requested that the item remain developing status as additional data is collected.

During the Committee work session, the Committee agreed to retain this item as Developing to allow the submitter to continue working with members of the grain analyzer sector to collect additional data.

Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items, this one included, were addressed in the subsequent 2021 NCWM Interim Meeting.

During the Committee’s 2021 NCWM Annual Meeting Open Hearings, the Committee heard comments from Ms. Lee, who noted that additional data is needed to assess the proposed tolerances. Ms. Lee requested that this item remain Developing.

During the Committee work session, the Committee agreed to a Developing status for this item.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2019 WWMA Annual Meeting, Mr. Russ Vires (SMA) stated the SMA takes no position on this item and looks forward to additional analysis by the submitter.

The Committee agrees the item has merit. However, based on input provided from the NTEP Grain Analyzer Sector, there will be additional data provided to the Committee prior to the 2020 NCWM Interim Meeting. The Committee agrees the item should be designated as a Developing item.

At the 2019 SWMA Annual Meeting, Mr. Vires stated he had no position on this item. Ms. Diane Lee (NIST OWM) stated that nationwide testing on more grains would be taking place to aid in any tolerance change determinations. Ms. Lee recommended this item remain Developing. The Committee recommends this item to remain a Developing Item so that more detailed tolerances can be determined.

At the 2019 NEWMA Interim Meeting, the Committee and the body agree that this item should continue as a Developing item. No comments were heard during open hearings.

At the 2019 CWMA Interim Meeting, Mr. Doug Musick (Kansas) commented that Arkansas had concerns that meters may not be capable of operating within these tolerances for some grains. Mr. Ivan Hankins (Iowa) supports Developing status until more data is received. We recommend this item move forward as a developing item.

At the 2020 WWMA Annual Meeting, only voting items were discussed at this meeting therefore, this item was not discussed.

At the 2020 SWMA Annual Meeting, only voting and new items were reviewed during the meeting. Therefore, this item was not reviewed.

Regarding the 2020 NEWMA Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the 2020 NEWMA Interim Meeting, only voting and new items were reviewed during the meeting. Therefore, this item was not reviewed.

Regarding the 2020 CWMA Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the 2020 CWMA Interim Meeting, the S&T committee heard comments from Ms. Lee giving an update from the NTEP Grain Analyzer Sector work on this item and requested this item remain developing so they can complete their work on this item. The committee recommends this item remain with a Developing status.

At the 2021 CWMA Annual Meeting, Ms. Lee gave an update on the need for additional data on other grains. NIST OWM recommends that this item remain developing. The CWMA S&T Committee recommends that this item remains Developing.

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

GMA-20.1 V S.2.5. Provisions for Sealing.

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings

related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert's Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

(The item under consideration reflects editorial changes that were made by the Committee during its 2020 NCWM Annual Meeting work session.)

Source:

NTEP Grain Analyzer Sector

Purpose:

Correct an error caused by a 2019 amendment that inadvertently removed applicability of the provisions in Table S.2.5.1. for any devices manufactured prior to 2020.

Item Under Consideration:

Amend NIST Handbook 44, Grain Moisture Meter Code 5.56 (a) as follows:

S.2.5. Provision for Sealing. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

~~Provision shall be made for applying a~~ An approved means of security shall be provided seal in a manner that requires the security seal to be broken, or for using other approved means of providing security (e.g., audit trail available at the time of inspection (as defined in Table S.2.5. Categories of Device and Methods of Sealing Table S.2.5. Categories of Device and Methods of Sealing For Devices Manufactured Between January 1, 1999 and January 1, 2020 ~~Categories of Device and Methods of~~ and paragraph S.2.5.1. Sealing Requirements for Devices Manufactured on or after January 1, 2020) before any change that affects the metrological integrity of the device can be made to any mechanism.

(Amended 2019 and 2021)

<p align="center">Table S.2.5 Categories of Device and Methods of Sealing <u>For Devices Manufactured Between January 1, 1999 and January 1, 2020</u></p>	
Categories of Device	Methods of Sealing
Category 1¹: No remote configuration capability.	Seal by physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.
Category 2²: Remote configuration capability, but access is controlled by physical hardware. A device shall clearly indicate that it is in the remote configuration mode and shall not be capable of operating in the measure mode while enabled for remote configuration.	The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.

Table S.2.5
Categories of Device and Methods of Sealing
For Devices Manufactured Between January 1, 1999 and January 1, 2020

Categories of Device	Methods of Sealing
<p>Category 3²: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</p> <p>When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</p>	<p>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants). A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to 25 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</p>
<p>Category 3a: No remote capability, but operator is able to make changes that affect the metrological integrity of the device (e.g., slope, bias, etc.) in normal operation.</p> <p><u>*When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</u></p>	<p><u>Same as Category 3</u></p>
<p>Category 3b: No remote capability, but access to metrological parameters is controlled through a software switch (e.g., password).</p> <p><u>*When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</u></p>	<p><u>Same as Category 3</u></p>
<p>¹Not allowed for devices manufactured on or after January 1, 2020</p> <p>²Required for all devices manufactured on or after January 1, 2020</p>	

[Nonretroactive as of January 1, ~~2020~~ **1999**]

[*Nonretroactive as of January 1, 2014]

(Amended 1998, 2013, ~~and~~ 2019, **and 2021**)

Note: Zero-setting and test point adjustments are considered to affect metrological characteristics and must be sealed.

(Added 1993) (Amended 1995 and 1997)

S.2.5.1. Sealing Requirements for Devices Manufactured on or after January 1, 2020. – An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants.)

A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to 25 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)

(Added 2021)

Background/Discussion:

At its 2018 Grain Analyzer Sector meeting, the GA Sector agreed to a proposal to change the sealing requirements for NTEP grain moisture meters. Changes were proposed to NIST HB 44 Section 5.56(a) Table S.2.5. requiring all grain moisture meters have an event logger and meet the requirements that are associated with a Category 3 device after 2020. The Sector believed that due to the complexities of these devices, an event logger would be appropriate sealing. In addition, there are currently eight NTEP grain moisture meter and these meter except for one are equipped with an event logger.

At the 2019 Annual Meeting, the S&T Committee heard comments from NIST OWM that the GA Sector's proposal may lead to confusion as to when to apply the new requirements and encouraged the S&T Committee to consider the NIST OWM proposal included in the OWM Analysis provided at the 2019 Annual Meeting. During the S&T Committee meeting, members were unable to determine possible confusion in the existing proposal. A comment was made that a nonretroactive date was not included in the proposal and the Committee selected a nonretroactive date of 2020.

The changes were adopted into the 2020 version of NIST HB 44. After further review it was noted that adding a non-retroactive date of 2020 caused an unintentional error. The table now only applied to devices manufactured or place into service after 2020 and the table no longer applied to devices that are currently in use.

At the 2019 Grain Analyzer Sector meeting, the Sector discussed the error in the 2020 version of NIST HB 44, Section 5.56(a), Table S.2.5. and considered two proposals for changes to correct the error in NIST HB 44. A proposal to remove the nonretroactive date and italics from the table (see below) and the proposal in the item under consideration.

Table S.2.5. Categories of Device and Methods of Sealing	
Categories of Device	Method of Sealing
Category 1¹: No remote configuration capability	Seal by physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999.) If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.
Category 2¹: Remote configuration capability, but access is controlled by physical hardware. Device shall clearly indicate that it is in the remote configuration mode and shall not be capable of operating in the measure mode while enabled for remote configuration.	The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters; one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999.) If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.
Category 3²: Remote Configuration capability, access may be unlimited or controlled through a software switch (e.g. password.) When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measure mode.	An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants.) A printed copy of the information must be available through the device or

	through another on-site device. The event logger shall have a capacity to retain records equal to twenty-five (25) times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)
¹ Not allowed for devices manufactured on or after January 1, 2020	
² Required for all devices manufactured on or after January 1, 2020	

~~Non-retroactive as of January 1, 2020.~~

Amended 1998, 2013, 2019, **2020**

The GA Sector received no objections or concerns to both proposals and agreed with the suggestion to remove the nonretroactive date and italics during the meeting. But, realizing errors that could be introduced by changing an existing table that applies to other devices in use, the Grain Analyzer Sector requested that this proposal be further reviewed at NIST, and an appropriate proposal be sent to the Sector for ballot to be included on the 2020 NCWM S&T Agenda that would correct the error in the NIST HB 44 Section 5.56(a).

After review of the GA Sector's proposal to remove the nonretroactive date and italics from Table S.2.5, NIST OWM provided the following comments and recommendations:

- Making changes to an existing sealing table that applies to many devices that are currently in use may inadvertently leave a gap in enforcement for these devices. Finding all gaps associated with these changes to the table is a timely process and all gaps may not be observed within the limited time frame to review changes before they are submitted in the current process for adoption into NIST HB 44.
- Dates with a nonretroactive status, address more than just the date to apply the requirement, a nonretroactive status also applies to those devices:
 - manufactured within a state after the effective date,
 - brought into a state after the effective date,
 - place into commercial service after the effective date, and
 - undergoing type evaluation, including devices that have been modified to the extent that a new NTEP certificate of Conformance (CC) is required.

Deleting a nonretroactive date may present a gap in how to apply the requirements to devices falling into one of these categories and including dates with only guidance of when to apply the requirement may also have gaps as to how to deal with devices falling into the categories mentioned.

- Regulatory jurisdictions have associated a Category 3 device as having remote configuration. Changes to this category of device may cause confusion in weights and measures jurisdictions. In addition, a philosophy for sealing has been published which recognizes Category 3 devices as those devices with remote configuration.
- As such, NIST OWM recommends keeping NIST HB 44 (2019), Section 5.56(a) Table S.2.5 to address those devices currently in service.

The Grain Analyzer Sectors requested that the NIST OWM Technical Advisor ballot the Sector with a proposal that provides appropriate changes to correct the error and the results were 10 Affirm Votes and 1 Affirm vote with comments. The proposal is based on the 2020 version of NIST HB 44 that includes the following changes that were adopted into the 2020 version of NIST HB 44, Section 5.56(a):

- adoption of paragraph G-S.8.2 that resulted in an update to Section 5.56(a) paragraph S.2.5.

- the adoption of changes to 5.56(a) Table S.2.5. which created an unintentional error of limiting NIST HB 44, Section 5.56 (a), Table S.2.5 to devices manufactured after 2020.

The proposal includes dates of when to apply sealing requirements. The format of this wording is consistent with wording used in NIST HB 44 Section 2.20. Scales code, Section S.2.1.3.

During the 2020 NCWM Interim Meeting Open Hearings, the Committee heard from Ms. Diane Lee (NIST OWM), who stated that this item corrects errors that were adopted into the GMM Code, Table S.2.5 in 2020 edition of the handbook and clarifies effective dates for when to apply the requirements. Mr. Doug Musick (Kansas) stated that he believes the current requirements are more easily interpreted with the proposed language. Mr. Musick also noted that editorial changes may be needed in S.2.5.2. for the number of events for the event counter. Mrs. Tina Butcher (NIST OWM) noted that these changes are necessary due to multiple options regarding sealing.

During the Committee work session, the Committee agreed that this item should be given a Voting status.

During Open Hearings at 2020 NCWM Annual Meeting conducted in January 2021, the Committee heard comments from Ms. Lee, who provided an update on the item. Ms. Lee noted that the Grain Moisture Meter Sector had reviewed and agreed to editorial changes to the item and that the editorial changes were posted on the NCWM's website. The S&T Committee presented the amended version of the item that is shown in Item Under Consideration.

During the Committee's 2020 work session, members of the Committee agreed to present this item for vote that it ratified at the next NCWM in-person meeting. The Item Under Consideration reflects the editorial changes that were agreed to by the Committee during its 2020 Annual Meeting work session.

(Note: For reference, the Item under consideration that was provided in Publication 16 for the 2020 Annual meeting is included below)

S.2.5. Provision for Sealing. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

~~Provision shall be made for applying a~~ **An approved means of security shall be provided seal in a manner that requires the security seal to be broken, or for using other approved means of providing security (e.g., audit trail available at the time of inspection** as defined in paragraphs S.2.5.1 Sealing Requirements for Devices Manufactured Between January 1, 1999 and January 1, 2020 Categories of Device and Methods of and S.2.5.2 Sealing Requirements for Devices Manufactured on or after January 1, 2020) before any change that affects the metrological integrity of the device can be made to any mechanism.

(Amended 2019, 2020)

S.2.5.1. Sealing Requirements for Devices Manufactured Between January 1, 1999 and January 1, 2020.
- The appropriate sealing requirements in Table S.2.5.1. shall apply.

<p align="center"><u>Table S.2.5.1.</u> <u>Categories of Device and Methods of Sealing</u> <u>For Devices Manufactured Between January 1, 1999 and January 1, 2020</u></p>	
<i>Categories of Device</i>	<i>Methods of Sealing</i>
<i>Category 1⁺: No remote configuration capability.</i>	<i>Seal by physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.</i>

**Table S.2.5.1.
Categories of Device and Methods of Sealing
For Devices Manufactured Between January 1, 1999 and January 1, 2020**

Categories of Device	Methods of Sealing
<p>Category 2¹: Remote configuration capability, but access is controlled by physical hardware.</p> <p>A device shall clearly indicate that it is in the remote configuration mode and shall not be capable of operating in the measure mode while enabled for remote configuration.</p>	<p>The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.</p>
<p>Category 3²: <u>Remote</u> configuration capability access may be unlimited or controlled through a software switch (e.g., password).</p> <p>When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</p>	<p>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants). A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to 25 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</p>
<p>Category 3a: <u>No remote capability, but operator is able to make changes that affect the metrological integrity of the device (e.g., slope, bias, etc.) in normal operation.</u></p> <p><u>*When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</u></p>	<p><u>Same as Category 3</u></p>
<p>Category 3b: <u>No remote capability, but access to metrological parameters is controlled through a software switch (e.g., password).</u></p> <p><u>*When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</u></p>	<p><u>Same as Category 3</u></p>
<p>¹ Not allowed for devices manufactured on or after January 1, 2020</p> <p>² Required for all devices manufactured on or after January 1, 2020</p>	

[Nonretroactive as of January 1, ~~2020~~ **1999**]

[*Nonretroactive as of January 1, 2014]

(Amended 1998, 2013, and 2019, **2020**)

Note: Zero-setting and test point adjustments are considered to affect metrological characteristics and must be sealed.

(Added 1993) (Amended 1995 and 1997)

S.2.5.2. Sealing Requirements for Devices Manufactured on or after January 1, 2020. - An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants.)

A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to 25 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

This item was submitted by the NTEP Grain Analyzer Sector following the fall 2019 regional meetings. At that time, the item was not submitted to the WWMA, SWMA, and NEWMA Meetings.

At the 2020 WWMA Annual Meeting, only voting and new items were reviewed during the meeting. Therefore, this item was not reviewed.

At the 2020 SWMA Annual Meeting, only voting and new items were reviewed during the meeting. Therefore, this item was not reviewed.

At the 2020 NEWMA Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the 2020 NEWMA Interim Meeting, only voting and new items were reviewed during the meeting therefore, this item was not reviewed.

At the 2020 CWMA Interim Meeting, the S&T Committee heard no comments during open hearings on this item. The Committee recommends the item moving forward as a Voting item with the proposed amendments by the NCWM S&T Committee.

Regarding the 2020 CWMA Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the 2020 CWMA Interim Meeting, the S&T Committee heard no comments during open hearings on this item. The Committee recommends the item moving forward as a Voting item with the proposed amendments by the NCWM S&T Committee.

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

MDM - Multiple Dimension Measuring Devices

MDM-20.1 V S.1.3. Negative Values, S.1.6. Customer Indications and Recorded Representations, S.1.7. Minimum Measurement, S.1.8. Indications Below Minimum and Above Maximum, S.2. Design of Zero Fare
Dimensional Offset
and Appendix D – Definitions: dimensional offset

(This item was adopted following ratification.)

Ratification: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the current NCWM Bylaws and Robert’s Rules of Order items approved by a virtual vote are effective upon ratification at the next in-person opportunity. To hold the 106th Annual Meeting, NCWM obtained court approval to meet virtually and amend its Bylaws allowing virtual ratification of the decisions of the 105th Annual Meeting and the 106th Annual Meeting. This voting item appeared in a consent calendar on the Board of Directors Agenda for ratification at the 106th Annual Meeting held July 2021 and was ratified at that meeting.

Source:

NTEP Multiple Dimension Measuring Device Work Group

Purpose:

Better define and document current practices related to the removal of a conveyance method (skid, pallet, etc.) from the final measurement.

Item Under Consideration:

Amend NIST Handbook 44, Multiple Dimension Measuring Devices Code as follows:

S.1.3. Negative Values. – ~~Except when in the tare mode, n~~ Negative values shall not be indicated or recorded.

(Amended 2021)

S.1.6. Customer Indications and Recorded Representations.

...

Table S.1.6.
Required Information to be Provided by Multiple Dimension Measuring Systems

Information	Column I ¹	Column II ¹		Column III
	Provided by device	Provided by invoice or other means		Provided by invoice or other means as specified in contractual agreement
		Customer present	Customer not present	
1. Device identification ²	D or P	P	P	P or A
2. Error message (when applicable)	D or P	P	N/A	N/A
3. Hexahedron dimensions ³	D or P	P	P	P or A

Table S.1.6. Required Information to be Provided by Multiple Dimension Measuring Systems				
4. Hexahedron volume (if used) ³	D or P	P	P	P or A
5. Actual weight (if used) ³	D or P	P	P	P or A
6. Tare Dimensional Offset (if used) ³	D or P	N/A	N/A	N/A
7. Hexahedron measurement statement ⁴	D or P or M	P	P	P or G
A = AVAILABLE UPON REQUEST BY CUSTOMER⁵ D = DISPLAYED G = PUBLISHED GUIDELINES OR CONTRACTS M = MARKED N/A = NOT APPLICABLE P = PRINTED or RECORDED IN A MEMORY DEVICE and AVAILABLE UPON REQUEST BY CUSTOMER⁵ Notes: ¹ As a minimum all devices or systems must be able to meet either column I or column II. ² This is only required in systems where more than one device or measuring element is being used. ³ Some devices or systems may not utilize all of these values; however, as a minimum either hexahedron dimensions or hexahedron volume must be displayed or printed. ⁴ This is an explanation that the dimensions and/or volume shown are those of the smallest hexahedron in which the object that was measured may be enclosed rather than those of the object itself. ⁵ The information “available upon request by customer” shall be retained by the party having issued the invoice for at least 30 calendar days after the date of invoicing.				

(Amended 2004 and 20XX)

S.1.7. Minimum Measurement. – Except for entries of ~~tare~~**dimensional offset**, the minimum measurement by a device is 12 d. The manufacturer may specify a longer minimum measurement. For multi-interval devices, this applies only to the first measuring range (or segment) of each measurement axis (length, width, and height).

(Amended 2017 and 20XX)

S.1.8. Indications Below Minimum and Above Maximum. – When objects are smaller than the minimum dimensions identified in paragraph S.1.7. Minimum Measurement or larger than any of the maximum dimensions plus 9 d, and/or maximum volume marked on the device plus 9 d, or when a combination of dimensions, including ~~tare~~**dimensional offset**, for the object being measured exceeds the measurement capability of the device, the indicating or recording element shall either:

- (a) not indicate or record any usable values; or
- (b) identify the indicated or recorded representation with an error indication.

(Amended 2004, ~~and 2017~~ and 20XX)

S.2. Design of Zero and ~~Tare~~Dimensional Offset.****

S.2.1. Zero or Ready Adjustment.

....

S.2.2. ~~Tare~~Dimensional Offset. – ~~The tare function shall operate only in a backward direction (that is, in a direction of underregistration) with respect to the zero reference or ready condition of the device. The value of the tare division or increment shall be equal to the division of its respective axis on the device. There shall be a clear indication that tare has been taken. The dimensional offset shall eliminate the effect of the conveyance method resulting in the measurement of only the object intended to be measured.~~

(Amended 20XX)

S.2.2.1. Maximum Value of ~~Tare~~Dimensional Offset for Multi-Interval (Variable Division-Value Devices). – A multi- interval device shall not accept any ~~tare~~**dimensional offset** value greater than the maximum capacity of the lowest range of the height axis ~~for which the tare is being entered.~~

(Added 2016 and 20XX)

S.2.2.2. Net Values, Mathematical Agreement. – ~~All net values resulting from a device subtracting a tare entry from a gross value indication shall be indicated and recorded, if so equipped, to the nearest division of the measuring range in which the net value occurs. In instances where the tare value entered on a multi-interval device is in a lower partial measuring range (or segment) than the gross indication, the system shall either alter the tare entered or round the net result after subtraction of the tare in order to achieve correct mathematical agreement.~~

Consider a multi-interval device having two partial-measuring ranges for the “x” axis:

- ~~Partial measuring range 1: 0 to 100 inches in 0.2 inch increments~~
- ~~Partial measuring range 2: 100 to 300 inches in 0.5 inch increments~~

~~The following examples clarify the two acceptable methods this device can use to achieve mathematical agreement when tare has been entered in a lower partial-measuring range than the gross indication.~~

(Added 2016)

Acceptable Example 1: Altering of a Tare Entry to Achieve Accurate Net Indication			
Gross Indication of Item Being Measured	Tare Entered	Value of Tare after Being Altered by the Device	Acceptable Net Indication
154.5 in	41.2 in	41.0 in	113.5 in
154.5 in	41.4 in	41.5 in	113.0 in

(Added 2016)

Acceptable Example 2: Rounding of the Net Result (Following the Subtraction of Tare) to Achieve Accurate Net Indication			
Gross Indication of Item Being Measured	Tare Entered	Net Result Before Rounding (Gross Indication minus Tare Entered)	Acceptable Net Indication Rounded to Nearest 0.5 Inch
154.5 in	41.2 in	113.3 in	113.5 in
154.5 in	41.4 in	113.1 in	113.0 in

(Added 2016)

Add the following definition to NIST Handbook 44 Appendix D.

Dimensional offset: The effect of eliminating the conveyance material on a measurement made by a multiple dimension measuring device resulting in only the object intended to be measured being measured. [5.58.]

Background/Discussion:

At the May 2019 meeting of the Multiple Dimension Measuring Device (MDMD) Work Group, the members of the work group discussed the correctness of the use of the word “tare” when referring to the removal of the height of a conveyance method (pallet, skid, etc.) for the purpose of obtaining a measurement of only the actual object intended to be transported. For example, a transportation company may want to place the object on a pallet to facilitate the ease of handling, however; the transportation company does not want the height of the pallet to be included in the cost calculations when determining the charge to the company requesting the transportation of the object.

The word ‘tare’, because of its extensive use and how it is applied in the weighing community, is always thought of as the removal of a weigh value from a gross weight value to obtain a net weight value. The function of removing a pallet or skid height from the total height of an object in the measuring field does not result in a net height, it results in measuring only the object sitting on the pallet.

The work group discussed topic in detail and as a result of the discussions, the members of the work group, including representatives from device manufacturers, device users, and NTEP evaluators, came to the conclusion that the word “tare” should be replaced with the term “dimensional offset”.

During the 2020 NCWM Interim Meeting Open Hearings, the Committee heard from a member of the Multiple Dimension Measuring Device (MDMD) Work Group (submitter) commenting that this item is primarily a housekeeping item replacing the use of the term “tare” with “dimensional offset” to more accurately represent the process and performance of MDMDs. Since these devices are calculating a measurement of volume occupied by the object being measured and not typically weighing that object, the work group believes this is a more accurate term. The submitter recommends a voting status. Other comments were heard in support of a voting status. Mr. Kevin Schnepf (California Division of Measurement Standards) noted that a definition of “dimensional offset” is not shown in the Item Under Consideration. However, the definition is included in the title of the proposal, and recommended it be added to the item.

During its work session, the Committee agreed this item should be given a Voting status with definition for “dimensional offset” added. This definition was included in the original submission of this proposal (submitted on a separate Form 15); however, it was omitted in the 2020 Interim Meeting S&T Committee’s agenda when published. The definition intended to be added to NIST HB 44 Appendix D is shown below.

Dimensional offset: The effect of eliminating the conveyance material on a measurement made by a multiple dimension measuring device resulting in only the object intended to be measured being measured.
[5.58.]

During the NCWM 2020 Annual Meeting, a member of the Multi-Dimensional Measuring Device (MDMD) WG explained that this is simply a housekeeping item, and when the MDMD Code was adopted into NIST HB 44, the Scales code was used as a template and the use of the term tare was carried over into the new code. However, that term doesn’t accurately describe what occurs during the MDMD measuring process.

The changes proposed by this item better reflect how MDMD’s separate and measure the volume of an item/load contained on a conveyance object (e.g., a pallet). According to the MDMD manufacturers in attendance at the May 2019 MDMD Work Group Meeting, MDMD’s do not subtract “tare” (e.g., volume of a pallet) from “gross” (volume of a pallet plus the item/load to be measured) to determine a “net” measurement. There is no subtraction of tare taking place, but rather a cancelling effect of the conveyance object so that just the item/load contained on the pallet is measured.

During the Committee’s work session, members of the Committee agreed the changes, as proposed by the Multiple Dimension Measuring Device WG, were appropriate and to present the item for vote.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2019 WWMA Annual Meeting, no comments were heard during the open hearing session. The WWMA agrees the item has merit and should be assigned a Voting status.

At the S2019 WMA Annual Meeting, the Committee heard comments from Mr. Russ Vires (Mettler-Toledo), who supports the item as written. The SWMA also heard comments from Mr. Richard Suiter (Richard Suiter Consulting, MDMD Work Group Member), who stated that the goal of the work group is to change the term “Tare” to “multi-dimensional offset.” After consideration of this item, the Committee recommends this item move forward as a Voting Item.

At the 2019 NEWMA Interim Meeting, the NEWMA agreed that this item should be moved to Voting status. Mr. Suiter, a MDMD WG member, commented that MDMD code was borrowed from Scale code using “tare” as a term. The MDMD doesn’t use “tare” when determining measurements, so the language change is a housekeeping item.

At the 2019 CWMA Interim Meeting, Mr. Suiter commented that this is a housekeeping item and it should move forward as voting. Mr. Doug Musick (Kansas) suggested that a definition of “Dimensional Offset” may need to be developed. We recommend this item as a Voting item.

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

OTH - OTHER ITEMS

OTH-16.1 D Electric Watthour Meters Code under Development

Source:

NIST OWM

Purpose:

- 1) Make the weights and measures community aware of work being done within the U.S. National Work Group on Electric Vehicle Fueling and Submetering to develop proposed requirements for electric watt-hour meters used in submeter applications in residences and businesses;
- 2) Encourage participation in this work by interested regulatory officials, manufacturers, and users of electric submeters.
- 3) Allow an opportunity for the USNWG to provide regular updates to the S&T Committee and the weights and measures community on the progress of this work;
- 4) Allow the USNWG to vet specific proposals as input is needed.

Item Under Consideration:

Create a “Developing Item” for inclusion on the NCWM S&T Committee Agenda where progress of the USNWG can be reported as it develops legal metrology requirements for electric watt-hour meters and continues work to develop test procedures and test equipment standards. The following narrative is proposed for this item:

In 2012, NIST OWM formed the U.S. National Working Group on Electric Vehicle Fueling and Submetering to develop proposed requirements for commercial electricity-measuring devices (including those used in sub-metering electricity at residential and business locations and those used to measure and sell electricity dispensed as a vehicle fuel) and to ensure that the prescribed methodologies and standards facilitate measurements that are traceable to the International System of Units (SI).

In 2013, the NCWM adopted changes recommended by the USNWG to the NIST Handbook 130 requirements for the Method of Sale of Commodities to specify the method of sale for electric vehicle refueling. At the 2015 NCWM Annual Meeting, the NCWM adopted NIST Handbook 44 Section 3.40 Electric Vehicle Refueling Systems developed by the USNWG.

This Developing Item is included on the Committee’s agenda (and a corresponding item is proposed for inclusion on the L&R Committee Agenda) to keep the weights and measures community apprised of USNWG current projects, including the following:

- The USNWG continues to develop recommended test procedures for inclusion in a new EPO 30 for Electric Vehicle Refueling Equipment along with proposed requirements for field test standards.
- The USNWG is continuing work to develop a proposed code for electricity-measuring devices used in sub-metering electricity at residential and business locations. This does not include metering systems under the jurisdiction of public utilities. The USNWG hopes to have a draft code for consideration by the community in the 2019-2020 NCWM cycle.

The USNWG will provide regular updates on the progress of this work and welcomes input from the community. For additional information, please contact the subgroups of the USNWG (see below).

Background/Discussion:

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Electric Vehicle Refueling Subgroup:

Mrs. Tina Butcher, Chair
NIST Office of Weights and Measures
(301) 975-2196, tina.butcher@nist.gov

Electric Watt-hour Meters Subgroup:

Ms. Lisa Warfield, Chair
NIST Office of Weights and Measures
(301) 975-3308, lisa.warfield@nist.gov

Or

Ms. Juana Williams, Technical Advisor
NIST Office of Weights and Measures
(301) 975-2196, juana.williams@nist.gov

Or

Mrs. Tina Butcher, Technical Advisor
NIST Office of Weights and Measures
(301) 975-2196, tina.butcher@nist.gov

This item was submitted as a Developing item to provide a venue to allow the USNWG to update the weights and measures community on continued work to develop test procedures and test equipment standards within its Electric Vehicle Refueling Subgroup. This item will also serve as a forum in which to report work on the development of a proposed tentative code for electric watthour meters in residential and business locations by the USNWG's Electric Watthour Meters Subgroup and a placeholder for its eventual submission for consideration by NCWM.

USNWG on Electric Refueling & Submetering Chair, Mrs. Tina Butcher (NIST OWM) has continued to provide regular updates to the Committee on this work. See the Committee's 2016 through 2018 Final Reports for details at www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports.

During the 2018 NCWM Interim Meeting, no comments were heard on this item and the Committee agreed to maintain its Developing status. The Committee did not take comments during open hearings on Developing items at the 2018 NCWM Annual Meeting and agreed to allow only the submitter of a Developing item (or block of Developing items) to provide an update on the progress made to further develop the item(s) since the 2018 NCWM Interim Meeting. The Committee received an update on this item from Mrs. Tina Butcher (NIST OWM), Chair of the USNWG on Electric Refueling & Submetering. See the Committee's 2018 Final Report for Details.

NIST OWM personnel were unable to attend the 2019 NCWM Interim Meeting due to the Federal Government shutdown in early 2019 due to a lack of appropriations; however, OWM provided written comments to the Committee on this item in the advance of the meeting, including the following update on this item:

- The Electric Watthour Meter Subgroup (EWH SG) of the USNWG on Electric Vehicle Fueling & Submetering has held multiple in-person and web meetings since the 2017 NCWM Annual Meeting.
- The SG met in September 2017, November 2017, May 2018, and August 2018. All meetings included web-conferencing to allow those not able to attend in person to participate.
- The SG developed a proposed addition to NIST Handbook 130's Uniform Regulation for the Method of Sale (MOS) of Commodities (see Item MOS-8 on the L&R Committee's Agenda) to specify a method of sale for electrical energy sold through these systems and submitted the proposal to the four regional weights and measures association meetings in Fall 2018.
 - Three of the four regions recommend the MOS proposal on the L&R Agenda as a voting item, with the fourth abstaining due to lack of experience with these systems within the region.
- The SG continues work on a proposed code for EWH-type meters for NIST Handbook 44 and expects to have a draft ready for the 2020 NCWM cycle.
- OWM requests this item be maintained on the S&T Committee's agenda as a Developing Item while the SG finalizes its proposed NIST HB 44 draft. OWM will continue to apprise the Committee of progress.
- At their Fall 2018 meetings, all four regional associations indicated support for maintaining this as a Developing item on the Committee's agenda.
- The SG will hold its next in-person meeting in February 2019 in Sacramento, California. (*Technical Advisor's Note: This meeting was rescheduled to April 2019.*)

- Those interested in participating in this work please contact SG Chairman, Ms. Lisa Warfield, or Technical Advisor, Mrs. Butcher. Contact information is included at the beginning of this item.

At the 2019 NCWM Interim meeting, the Committee heard no comments on this item. At its work session, Committee members agreed with the submitter and the Regional Associations that this item should be assigned a Developing status.

During the 2019 NCWM Annual Meeting, Mrs. Butcher provided the Committee with an update on the further development of this item. Mrs. Butcher reported that the EWH SG will meet next in August 2019 to continue its work and requested this item remain on the S&T Committee agenda as a Developing item. During the Committee's work session, the Committee agreed with the submitter to retain this item in a Developing status.

During the 2020 NCWM Interim Meeting, the Committee heard from Mrs. Butcher who provided an update on developments in the Electric Watthour Meters Code, which is also included in the NIST OWM analysis. Mrs. Butcher requested that this item be given a Developing status.

During the Committee work session, the Committee agreed that this item should be given a Developing status. Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items, this one included, were addressed in the subsequent 2021 NCWM Interim Meeting.

During the 2021 NCWM Interim Meeting, the Committee heard from Mrs. Butcher who provided an update on the developments in the Electric Watthour Code, which is include in the NIST OWM analysis and Mrs. Butcher requested that this item be given a Developing status.

During the Committee work session, the Committee agreed that the item be given a Developing status.

At the 2021 NCWM Annual Meeting, the Committee received an update during Open Hearings from Mrs. Butcher. Mrs. Butcher reported NIST anticipated have a draft Electric Watthour Meters Code developed by Fall 2021. Mrs. Butcher recommended the Committee maintain the Developing status on this item to allow NIST to complete its work on the draft. Members of the Committee agreed to the Developing status as requested.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2019 WWMA Annual Meeting, Ms. Lisa Warfield (NIST OWM) provided the Committee with an update on the work group's efforts. Mr. Clark Cooney (California) encouraged the support from WWMA for this proposal and appreciates the efforts of the work group developing the item. The Committee recommends that the submitter continue its efforts on the development of this item.

At the 2019 SWMA Annual Meeting, the Committee heard no comments on this item. The Committee decided to make No Recommendation.

At the 2019 NEWMA Interim Meeting, the Committee and the body agree that this item should continue as a developing item. No comments were heard during open hearings.

At the 2019 CWMA Interim Meeting, they support the work of the USNWG on Electric Vehicle Fueling and Submetering and we recommend this item remain Developing.

At the 2020 WWMA Annual Meeting, only voting and new items were reviewed during the meeting. This item was not reviewed.

At the 2020 SWMA Annual Meeting, only voting and new items were reviewed during the meeting. This item was not reviewed.

At the 2020 NEWMA Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the 2020 NEWMA Interim Meeting, only voting and new items were reviewed during the meeting. This item was not reviewed.

Regarding the 2020 CWMA Annual Meeting, no meeting was held due to the COVID-19 pandemic.

At the 2020 CWMA Interim Meeting, the Committee heard from numerous regulatory officials that this item is a good addition to the handbook and recommended this item move forward as a voting item. We feel this item is fully developed and recommend this item as a Voting item.

At the 2021 NEWMA Annual Meeting, Mrs. Butcher explained that the subgroup was focused on developing code, closing in on a draft code and hoped to have an item for the fall meetings. The subgroup requests that the item remain developing. NEWMA S&T Committee recommends this item remain with Developing status.

At the 2021 CWMA Annual Meeting, Mrs. Butcher reported that work was nearly complete on this item and that a draft version of the code should be ready for the next cycle of meetings. The CWMA S&T Committee recommends that this item remain Developing.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

OTH-18.4 W Appendix D – Definitions: batch (batching)

Source:

Kansas

Purpose:

To clarify when batching is a metrologically significant event.

Item Under Consideration:

Amend NIST Handbook 44, Appendix D. Definitions as follows:

batch (batching) – The combining or mixing of two or more materials or ingredients using weighing and/or measuring devices or systems to produce a finished product whose quantity is determined from those weights and/or measurements.

(Added 20XX)

Background/Discussion:

This item has been assigned to the submitter for further development. For more information or to provide comment, please contact:

Mr. Loren Minnich
Kansas Department of Agriculture
(785) 209-2780, loren.minnich@ks.gov

The submitter of this item has reported to the Committee that when batching occurs during and as part of the weighing or measuring process special considerations should be made to ensure equity is preserved. This definition will help manufacturers, users, and regulators determine when batching is metrologically significant.

Batch or batching are terms used to define devices in Sections 2.20, 3.36, and in several definitions in Appendix D, yet there is no guidance for the regulatory official to determine what constitutes a “batch” or “batching” operation. Section 2.20 Scales has a specification, *S.1.2. Value of Scale Division Units*, and a tolerance, T.3. Sensitivity Requirement, Equilibrium Change Required. (c) Scale with a Single Balance Indicator and Having a Nominal Capacity of 250 kg (500 lb) or Greater., that are applied differently to batching scales. Section 3.36 Water Meters has a specification, test procedure, and user requirement that are specifically for batching meters. Having a definition will promote consistency in the way the devices are evaluated.

The submitter asserts that to many weights & measures officials, it may seem obvious what is implied by the terms batch or batching however, as the number of devices that don’t conform to the common conception of what a batching device is increases, there is a greater need for defining what the term means.

The Committee did not take comments during open hearings on Developing items at the 2018 NCWM Annual Meeting and agreed to allow only the submitter of a Developing item (or block of Developing items) to provide an update on the progress made to further develop the item(s) since the 2018 NCWM Interim Meeting. There was no update provided by the submitter of this Developing item during the open hearings at 2018 NCWM Annual Meeting. Members of the Committee agreed to carryover this item on its 2019 agenda as a Developing item.

During the 2019 NCWM Interim Meeting, the Committee heard comments from Mr. Jim Pettinato (TechnipFMC), who stated that there is at least one device that uses a *calculation* of the values measured when determining the total of a batching operation and is therefore not a *summation* of those values. Mr. Pettinato indicated he would be in favor of moving the item forward with a voting status if the words “the summation of” were removed from the proposed definition as follows:

batch (batching) - The combining or mixing of two or more materials or ingredients using weighing and/or measuring devices or systems to produce a finished product whose quantity is determined from the summation of those weights and/or measurements.

(Added 20XX)

The Committee agreed to amend the definition as requested and as shown in the Item Under Consideration and designated the item as “Voting.”

NIST OWM submitted written comments to the Committee prior to the NCWM 2019 Interim Meeting. Those comments included OWM belief that the definition proposed in this item is an appropriate description of the process of batching however, that process is not dependent on any particular type of weighing/measuring device. Also, in many batching operations, generic weighing/measuring devices are incorporated that may also be used in a variety of other applications. The design or available features offered by a device may be a factor in determining whether that device is suitable for use in any application. NIST OWM therefore believes that the weighing/measuring device performance should be evaluated using existing requirements and tolerances that are not dependent on the device’s use in a batching system.

NIST OWM maintains that the definition of the term “batching” does not define any device and questions how this definition will promote consistency in the way these generic devices are evaluated. Also noted was that the submitter cites two sections of the NIST HB 44 Scales Code that explicitly address batching scales and specify requirements and tolerances for scales that are used for this purpose. NIST OWM recognizes these two paragraphs in NIST HB 44 Scales Code as archaic requirements that address types of weighing devices generally considered outmoded and possibly obsolete.

NIST OWM also questions the benefit of the definition as purported by the submitter that it will “help manufacturers, users, and regulators determine when batching is metrologically significant.” NIST OWM requests a more complete explanation of the purpose of this proposal. Also noted is there are no references to device code(s) included in this proposed definition which prompts the question, in which codes is this proposed definition intended to apply?

At the 2019 NCWM Annual Meeting, Mr. Russ Vires (SMA) indicated that his organization opposes the item because batching is an application and not a type of device. Mr. Loren Minnich (Kansas), as the submitter, agreed with the

SMA, in that batching is an application, not a device type. This item was developed in part due to the proposed and subsequently adopted batching systems definition. Mr. Minnich said that maybe the definition is not needed but there seems to be conflicting ideas of what batch or batching means. Having a definition would help jurisdictions interpret this application uniformly.

Mr. Dmitri Karimov (MMA) opposes the item because “batch” is used to describe other processes that don’t combine ingredients or commodities. In the context associated with the MMA, batching meters measure only water, and this definition would conflict with that use of the term.

Mr. Richard Harshman (NIST OWM) stated OWM does not agree with adding this definition to NIST HB 44 for several reasons, which are outlined in their analysis. Those reasons include the following:

- batching is an application for devices and not a device type;
- since the application of batching does not require a specific device type, those weighing devices used to batch can be properly evaluated utilizing current NIST Handbook 44 Scales Code requirements:
- OWM views the references made in this proposal referring to batching in NIST HB 44 as outmoded and obsolete:
- the proposal does not state clearly how this definition would help officials properly evaluate devices used to batch: and
- the proposed definition is very similar to the definition for batching systems added to NIST HB 44 in 2018.

NIST requests a more detailed explanation as to why this definition is necessary, and notes that the proposed definition doesn’t include any numerical references to the sections it would apply to.

Mr. Charles Stutesman (Kansas) supports this item because, as a stockman he buys feed that is sold by the individual commodity/ingredient, and it is important to make sure they are weighed correctly. Mr. Stutesman agrees it may need some tweaking but would like to see it move forward.

During open hearings at the 2020 NCWM Interim Meeting, the submitter of this item, Mr. Minnich, requested that it be Withdrawn. During their work session, the Committee granted that request and agreed to Withdraw this item.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2019 WWMA Annual Meeting, Mr. Vires stated that the SMA opposes this item because “batching” is a process and not a device. Mr. John Barton (NIST OWM) commented that the stated purpose of this item has not been met by the proposed changes. Also, that the term batching is an application of devices used in a process and should not be used in the context of a device specification. The Committee agrees that this proposed change is unnecessary and that the item should be withdrawn.

At the 2019 SWMA Annual Meeting, Mr. Vires opposed this item. He stated that he believes batching is an application, not a device type. Mr. Richard Suiter (Richard Suiter Consulting) stated that Batching goes beyond just a method.

The Committee recommends this item be Withdrawn. Based on discussion, batching is a process or a system, not a device.

At the 2019 NEWMA Interim Meeting, the Committee and the body agree that this item should be moved to Developing status, as we do not deem item to be fully developed. During open hearings, Mr. John McGuire (New Jersey) raised the concern that this definition could possibly be used for blending at retail motor fuel devices.

At the 2019 CWMA Interim Meeting, Mr. Minnich commented that he is working on changes and requested the item be given a developing status. We recommend a Developing status.

Additional letters, presentations, and data may have been part of the Committee's consideration. To review the supporting documentation, please refer to the "Report of the 104th National Conference on Weights and Measures" (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

OTH-20.1 V Appendix D – Definitions: submeter (Now Item EVF-20.2)

(This item was adopted.)

This item was designated as a Voting item by the Committee at the 2020 NCWM Interim Meeting. Due to the 2020 COVID-19 pandemic, the 2020 NCWM Annual Meeting was adjourned to January 2021, at which time it was held as a virtual meeting. Due to constraint of time, only those items designated as 2020 Voting Items were addressed. All other items were addressed in the subsequent 2021 NCWM Interim Meeting. This item was supported as a Voting item and was adopted.

(This item has been renumbered to EVF-20.2; see that item for details).

OTH-21.1 V Appendix A – 2.1. Acceptance and Maintenance Tolerances.

(This item was adopted)

Source:

Arizona Department of Agriculture, Weights and Measures Division

Purpose:

Provide consistency between the General Code and Appendix A for when acceptance tolerance applies.

Item Under Consideration:

Amend NIST Handbook 44, Appendix A as follows:

2.1. Acceptance and Maintenance Tolerances. – The official tolerances prescribed by...

Acceptance tolerances are applied to new or newly reconditioned ~~or adjusted~~ equipment, equipment returned to service following official rejection for failure to conform to performance requirements, or equipment undergoing NTEP evaluation, and...

Previous Action:

N/A

Original Justification:

NIST Handbook 44 contains an inconsistency regarding the application of acceptance tolerance when evidence exists that a commercial device has been adjusted during the past 30 days (for example maintenance documents or calibration decals are applied demonstrating equipment adjustment). The General Code G-T.1. does not state that acceptance tolerance would apply in this situation. However, Appendix A, Section 2.1 states, "Acceptance tolerances are applied to new or newly reconditioned or adjusted equipment and are smaller than (usually one-half of) the maintenance tolerances" (underline added). The purpose of this proposed change is to update Appendix A to better reflect the verbiage and intent of General Code G-T.1

In 2019, a proposal was submitted proposing a modification to General Code G-T.1. that would have applied acceptance tolerance to equipment that has been adjusted as written in Appendix A (see item GEN-20.2). Based on feedback provided at the regional level, it appears that commenters disagree that acceptance tolerance should be applied following adjustment of equipment. Therefore, this proposal modifies Appendix A to remove language that states acceptance tolerance shall be applied to “adjusted equipment” to reflect the requirements in General Code G-T.1 and remove ambiguity.

The submitter requested voting status for this item in 2021.

At the 2021 Interim Meeting, the Committee heard testimony from Mr. Russ Vires (SMA) and Mr. Kevin Schnepf (California Division of Measurement Standards) to support the changes proposed and recommend a voting status. Mr. John Barton (NIST OWM) stated that the proposal has eliminated conflicting statements between G-T.1. and Section 2.1. in Appendix A in NIST HB 44 however, OWM believes there could be additional changes to G-T.1. to provide additional clarity as to when the application of acceptance tolerances are to be applied.

During the Committee’s work session, the Committee stated this item has merit and agreed to accept a revised version of the proposal recommended by the SMA and shown in Item Under Consideration. *NIST Technical Advisor’s note: The amended version of the proposal developed by the SMA is not included in the Committee’s 2021 Interim Meeting Report (NCWM Publication 16). Because this item was amended by the Committee just prior to voting during the 2021 NCWM Annual Meeting (as evidenced by the Committee’s 2021 Interim Meeting Report Addendum Sheet) to reflect the changes recommended by the SMA, it is not clear when the Committee actually agreed to accept the changes proposed by the SMA. In any case, the Committee agreed to the changes and presented the item for vote at the 2021 NCWM Annual Meeting as shown in Item Under Consideration i.e., to include the changes proposed by the SMA.*

The following reflects how the proposal (Item Under Consideration) appeared in the Committee’s 2021 Interim Meeting Report (NCWM Publication 16):

2.1. Acceptance and Maintenance Tolerances. – The official tolerances prescribed by a weights and measures jurisdiction for commercial equipment are the limits of inaccuracy officially permissible within that jurisdiction. It is recognized that errorless value or performance of mechanical equipment is unattainable. Tolerances are established, therefore, to fix the range of inaccuracy within which equipment will be officially approved for commercial use. In the case of classes of equipment on which the magnitude of the errors of value or performance may be expected to change as a result of use, two sets of tolerances are established: acceptance tolerances and maintenance tolerances.

Acceptance tolerances are applied to new or newly reconditioned ~~or adjusted~~ equipment, equipment returned to service following official rejection, or equipment undergoing NTEP evaluation, and are smaller than (usually one-half of) the maintenance tolerances. Maintenance tolerances thus provide an additional range of inaccuracy within which equipment will be approved on subsequent tests, permitting a limited amount of deterioration before the equipment will be officially rejected for inaccuracy and before reconditioning or adjustment will be required. In effect, there is assured a reasonable period of use for equipment after it is placed in service before reconditioning will be officially required. The foregoing comments do not apply, of course, when only a single set of tolerance values is established, as is the case with equipment such as glass milk bottles and graduates, which maintain their original accuracy regardless of use, and measure-containers, which are used only once.

The Committee agreed to move this item forward as a voting item at the 2021 NCWM Interim Meeting.

During the 2021 NCWM Annual Meeting the Committee received numerous comments in favor of the SMA’s version of the proposal during Open Hearings. During its work session, the Committee agreed to replace the version of the proposal in its agenda with that recommended by the SMA as shown in Item Under Consideration and present the item for vote.

Item Development:

N/A

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Specifications and Tolerances Committee rather than the NCWM Specifications and Tolerances Committee.)

At the 2020 WWMA Annual Meeting, Ms. Michelle Wilson (Arizona), submitter of the item, gave some background; in Arizona, they’ve had debate on acceptance tolerance after calibration. Last year we submitted to clarify that acceptance tolerance would be applied following adjustment. Majority felt that that was not appropriate. This is a Form 15 to clarify appendix A, section. 2.1. - currently says acceptance tolerance is applied to new or adjusted. This leaves it open to interpretation. Removing "or adjusted" and add language to match the appendix with General code. Recommend the item to move forward with Voting status. Mr. John Barton (NIST OWM) commented that he is not convinced this is the only change needed to be made. For example, G.T.1. needs clarification when and when not to apply. Mr. Brent Price (Gilbarco) agrees to remove “when adjusted”. He supports this item.

The Committee agrees the item is fully developed and recommends Voting status.

At the 2020 SWMA Annual Meeting, the SWMA heard from Mr. Tim Chesser (Arkansas), who stated that he supports the intent of the item but not the wording. Mr. Chesser suggested amending the code instead. The SWMA also heard from Mr. Barton, who stated that this is a revision of a previous proposal and that he agrees with the proposal. Mr. Barton also stated that enforcement of Acceptance Tolerance differs between some jurisdictions in regard to routine adjustments. The SWMA also heard from Mr. Price, who stated that he supports the proposal. Mr. Price stated that many devices are adjusted routinely and shouldn’t be considered like new. Mr. Chesser also stated that the 30-day window for Acceptance Tolerance exists because a meter should hold that adjustment for at least 30 days. If it cannot hold that calibration, it may be a bad meter. The SWMA also heard from Mr. Ken Ramsburg (Maryland) who stated that he agrees with Mr. Chesser, and that this item would put us at the mercy of the service agency to do a good job. The SWMA also heard from Mr. Hal Prince (Florida), who stated he sees both sides, and does not want to dissuade good maintenance practices, but knows some service agencies do poor work.

After considering this item the SWMA S&T Committee recommends the item as a Voting Item.

At the 2020 NEWMA Interim Meeting, the NEWMA S&T Committee agrees with the body that this proposal has merit and recommends that it be considered a Developing Item. During the open hearings, the NEWMA heard comments that the submitter has been working on this item and removed a conflicting statement. There are still some questions on routine maintenance and what precisely qualifies as an adjustment. There are also concerns that a device owner who responsibly maintains their equipment may be held to higher tolerances than an individual that does not properly maintain their equipment.

At the 2020 CWMA Interim Meeting, the CWMA heard from numerous regulatory officials that this item is a good addition to the handbook and recommended this item move forward as a Voting item. We feel this item is fully developed and recommend this item as a Voting item.

Additional letters, presentations, and data may have been part of the Committee’s consideration. To review the supporting documentation, please refer to the “Report of the 104th National Conference on Weights and Measures” (SP1253, 2020) at: nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1253.pdf.

Mr. Loren Minnich, Kansas | 2020 Committee Chair
 Mr. Jason Flint, New Jersey | Member
 Mr. Josh Nelson, Oregon | 2021 Committee Chair/2020 Member
 Mr. Brad Bachelder, Maine | Member
 Mr. Jason Glass, Kentucky | Member
 Mr. Luciano Burtini, Measurement Canada | Canadian Technical Advisor
 Mr. John Barton, NIST, OWM | NIST Technical Advisor
 Ms. G. Diane Lee, NIST, OWM | NIST Technical Advisor
 Mr. Mike Manheim, NCWM | NTEP Technical Advisor
Specifications and Tolerances Committee

2020 - 2021 Final Report of the Professional Development Committee (PDC)

Mr. Marc Paquette, 2020 Committee Chair
Vermont

Mr. David Aguayo, 2021 Committee Chair
San Luis Obispo County, California

INTRODUCTION

This is the final report of the Committee on Professional Development (hereinafter referred to as the “Committee”) for the 105th and 106th Annual Meetings of the National Conference on Weights and Measures (NCWM).

NCWM convened the 105th Annual Meeting in July 2020, then adjourned to January 10, 2021, due to the lack of a quorum. On January 10-12, 2021, the NCWM reconvened the 105th Annual Meeting and held virtual voting on the 2020 Agenda Items. This was followed by the 2021 Interim Meeting conducted January 13-15, 2021.

Robert’s Rules of Order allow virtual voting, provided that NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the NCWM Bylaws at that time and Roberts Rules of Order, items approved by a virtual vote are effective upon ratification at the next in-person opportunity. The 106th NCWM Annual Meeting was held July 19-22, 2021. NCWM obtained a court order allowing for virtual voting at the 106th Annual Meeting to ratify the decisions of the 105th Annual Meeting, including a bylaw amendment allowing for official virtual voting for the agenda items of the 106th Annual Meeting.

This final report contains the proceedings from both the 2020 and 2021 Annual Meetings. The report is based on the 2021 Interim Meeting Agenda offered in NCWM Publication 15; the 2021 NCWM Publication 16, “Committee Reports;” testimony at public hearings; comments received from the regional weights and measures associations and other parties; addendum sheets issued at the 2020 and 2021 Annual Meetings; actions taken by the membership at the voting sessions of the two (105th and 106th) Annual Meetings; and ratifications by the NCWM at the 106th Annual Meeting.

Table A identifies the agenda items by reference key, title of item, page number and the appendices by appendix designations. The acronyms for organizations and technical terms used throughout the agenda are identified in Table B. The first three letters of an item’s reference key are assigned from the Subject Series List. The next 2 digits represent the year the item was introduced. The status of each item contained in the report is designated as one of the following: **(V) Voting Item:** the committee is making recommendations requiring a vote by the active members of NCWM; **(I) Informational Item:** the item is under consideration by the Committee but not proposed for Voting; **(A) Assigned Item:** the Committee has assigned development of the item to a recognized subcommittee or task group within NCWM. **(D) Developing Item:** the Committee determined the item has merit; however, the item was returned to the submitter or other designated party for further development before any action can be taken at the national level; **(W) Withdrawn Item:** the item has been removed from consideration by the Committee.

Committees may change the status designation of agenda items (Developing, Informational, Assigned, Voting and Withdrawn) up until the report is adopted, except those items which are marked Developing, Informational, Assigned or Withdrawn cannot be changed to Voting Status. Any change from the Committee Interim Report (as contained in this publication) or from what appears on the addendum sheets will be explained to the attendees prior to a motion and will be acted upon by the active members of NCWM prior to calling for the vote.

Proposed revisions to the handbook(s) are shown as follows. 1) deleted language is indicated with a **bold face font using strikeouts** (e.g., ~~this report~~), and 2) proposed new language is indicated with an **underscore bold faced font** (e.g., new items). When used in this report the term “weight” means “mass.”

Note: The policy of NIST is to use metric units of measurement in all its publications; however, recommendations received by NCWM technical committees and regional weights and measures associations have been printed in this publication as submitted. Therefore, the report may contain references to U.S. customary units.

Subject Series List

Education	EDU Series
Program Management	PMT Series
Other Items.....	OTH Series

Table A
Table of Contents

Reference Key	Title of Item	PDC Page
EDU – EDUCATION		4
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PMT-1 I	Safety Awareness	32
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APPENDIX		
A	NIST OWM Training Future Plans – Updated Slides PDC Agenda Item EDU-2	A1

Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
ADDIE	Analysis, Design, Development, Implementation, and Evaluation	NIST	National Institute of Standards and Technology
ANSI	American National Standards Institute	SETG	Skimmer Education Task Group
BOK	Body of Knowledge	OWM	Office of Weights and Measures
CWMA	Central Weights and Measures Association	PDC	Professional Development Committee
ISO	International Standardization Organization	RSA	Registered Service Agents
ICE	Institute for Credentialing Excellence	SME	Subject Matter Expert
NCWM	National Conference on Weights and Measures	SWMA	Southern Weights and Measures
NEWMA	Northeastern Weights and Measures Association	WWMA	Western Weights and Measures Association

Details of All Items
(In order by Reference Key)

EDU – EDUCATION**EDU-1 I Professional Certification Program**

NOTE: The 105th Annual Meeting was a virtual event due to the COVID-19 pandemic. To streamline the event, Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

The NCWM now offers nine professional certification exams and two basic competency exams. The certification exams include Retail Motor Fuel Dispensers, Vehicle-Tank Meters, Small Capacity Scales, Medium Capacity Scales, Large Capacity Scales, Precision Scales, LPG and Anhydrous Ammonia, Price Verification and Basic Package Checking. Reporting on the LPG and Price Verification exam begins this year and reporting on the LPG and Anhydrous Ammonia will begin next year. The competency exams include Basic Weighing Devices and Basic Liquid-Measuring Devices. Professional certifications must be renewed every five years. The NCWM has implemented a process to notify candidates whose certificates have expired.

The exams for Precision Scales and LPG and Anhydrous Ammonia were released in July 2020. Work on developing the body of knowledge for mass flow meters will begin in early 2021 followed by packaging and labeling. The Committee encourages discussion about priorities for future exams and continuous improvement of the program.

The NCWM Board approved the guidelines for proctoring and implemented the system in August 2018. Proctoring is a vital component of plans to accredit the certification program. Each organization is required to register the proctors they intended to use. Proctor qualifications are different for basic competency exams and professional certification exams so two lists of proctors are maintained. To eliminate conflicts of interest, proctors for professional certification exams must not be immediate supervisors of the candidate.

Number of Proctors Per State (as of October 2020)

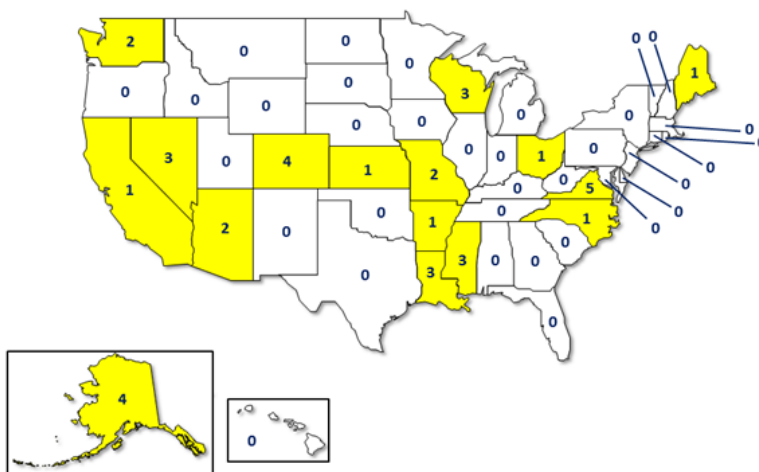
	FY17-18	FY18-19	FY19-20
Basic	39	57	70
Professional	17	28	37

Number of States with Proctors (as of October 2020)

	FY17-18	FY18-19	FY19-20
Basic	10	14	18
Professional	7	11	16

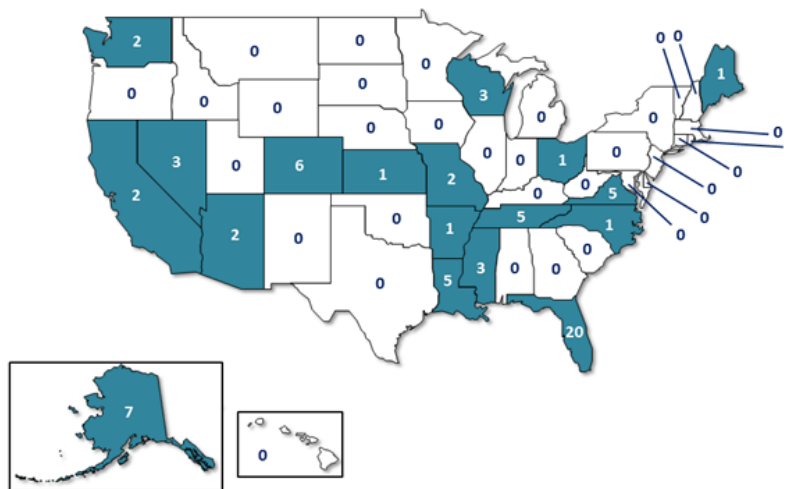
Proctors per State – Professional Certification Exams

Distribution of Certified Proctors per State – Professional Certification Exams
Updated: September 2020



Proctors per State – Basic Competency Exams

Distribution of Certified Proctors per State – Basic Competency Exams
Updated: September 2020



The requirements for proctors are posted on the NCWM **website**.

At its spring 2019 meeting, the Board reviewed the proposed exit survey questions prepared by the Committee to get feedback on the certification exams. The survey has been implemented and the results will be reviewed periodically and used to improve the program.

Status of Current Tests

The NCWM has issued 1,152 professional certificates from the inception of the Professional Certification Program to September 30, 2020. Of the certificates issued, twelve have been issued to individuals in the private sector. The balance of the certificates has been issued to regulators. There has been a significant decline in participation in the program. In FY 17-18, NCWM awarded 257 professional certificates and in FY 18-19, it awarded 53 professional certificates, a decline of 79%. Participation improved slightly in FY 19-20 with 56 individuals earning certificates. It appears that the decline coincides with the requirement to proctor exams, and the pandemic has had an impact on FY 19-20 participation. Some of the certificates have reached their 5-year expiration and certificate holders will need to seek recertification. NCWM notifies certificate holders before expiration to facilitate recertification.

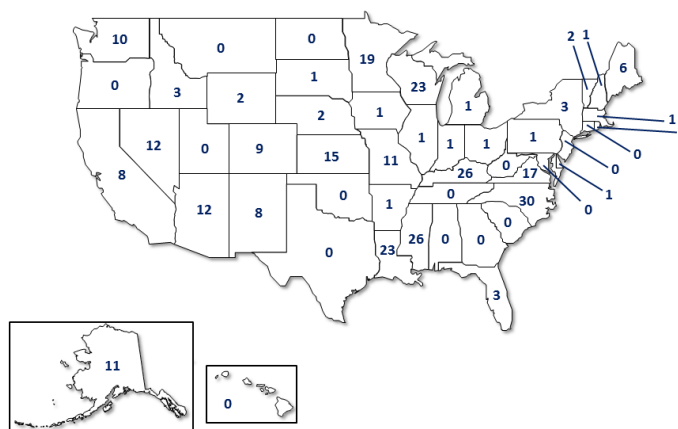
Number of Professional Certificates NCWM has issued as of the end of Fiscal Year 2020/21 (September 30, 2021)									
	FY10-11	FY11-12	FY12-13	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19
Exams Passed	44	94	105	62	198	140	142	257	53
Cumulative	44	138	243	305	503	643	785	1,042	1,096

Number of Basic Competency Certificates NCWM has issued as the end of Fiscal Year 2019-20

	FY 18-19	FY19-20
Exams Pass	64	56
Cumulative	65	1,152

The following map includes the states with individuals holding an active professional certificate in one or more disciplines. Please note that the twelve active certificates issued to private sector individuals are included in these figures, e.g., the three certificates in Arkansas are private sector individuals. This data only includes certificates that have not expired as of September 30, 2020.

Distribution of Certified Professionals per State
Updated: September 2020



The list below shows those states with the highest utilization of the program. The table values include activity since program inception and may include expired certificates. The Committee applauds these states and encourages increased use of the certification program nationwide.

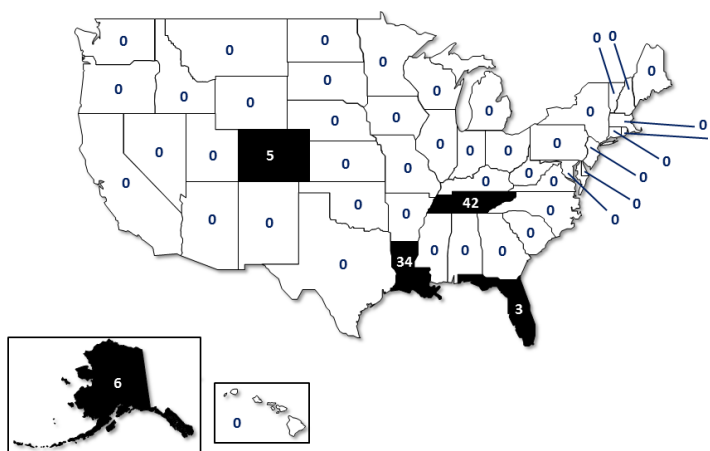
State	Certificates	State	Certificates	State	Certificates
Minnesota	152	Arizona	28	Pennsylvania	7
Missouri	143	Maine	26	Wyoming	7
Wisconsin	84	Nevada	25	Arkansas	6
Maryland	77	New Mexico	23	Delaware	4
Virginia	70	New York	19	Michigan	3
Mississippi	56	Colorado	18	South Dakota	3
North Carolina	52	Connecticut	15	Oregon	2
Washington	50	Indiana	13	Tennessee	2
Kansas	45	Ohio	13	Montana	1
California	41	Private	12	New Hampshire	1
Louisiana	40	Idaho	11	West Virginia	1
Alaska	42	Massachusetts	11		
Nebraska	33	Vermont	8		

NCWM Basic Competency Certificates issued:

	FY17-18	FY18-19	FY19-20
Exams Passed	1	64	25
Cumulative	1	65	90

The following map includes the states with individuals holding a basic competency certificate.

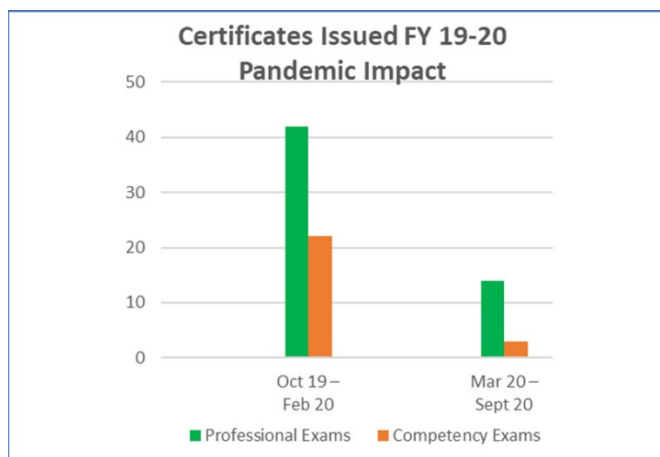
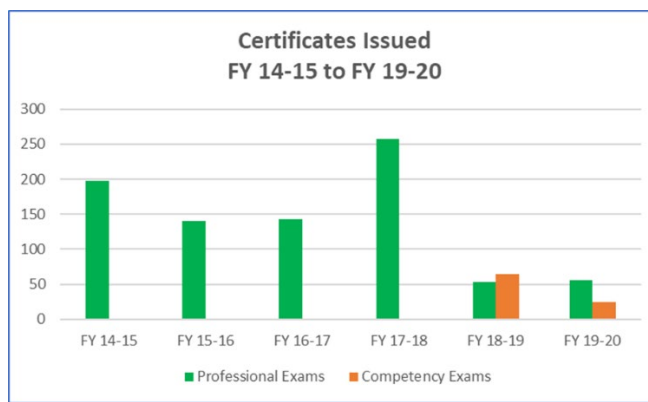
Distribution of Competency Exams per State
Updated: September 2020



The table below shows those states with the highest utilization of the Basic Exams Program. The Committee applauds these states and encourages increased use of the certification program nationwide.

State	Certificates
Tennessee	42
Louisiana	34
Alaska	6
Colorado	5
Florida	3

The following graphs show the impact of the pandemic on certifications issued.



Mr. Ross Andersen (New York, retired) stepped down as the Certification Coordinator at the end of the 2019 Annual Meeting in July. Mr. Jerry Buendel (Washington, retired) assumed the duties and had been working with Mr. Andersen over the last year to assure a smooth transition. Mr. Andersen did an outstanding job researching the elements of a certification program, writing the body of knowledge for exams, and writing exams. In addition, he developed a data system to administer the program. His efforts will serve NCWM and its members well into the future.

At the 2019 NCWM Annual Meeting, Mr. Tim Chesser (Arkansas) suggested the Committee investigate ways to encourage/assist states not yet providing proctors to do so. It was suggested by Mr. Buendel that alternate sources for proctoring, e.g., commercial ‘learning centers’, could be utilized. Mr. Ken Ramsburg (Maryland) voiced support for looking into this approach. Mr. Paul Floyd (Louisiana) suggested that existing government testing facilities (e.g., civil

service exams) could also provide examples of ways to provide proctored exams. Mr. Jim Willis (New York) expounded on that thought, suggesting state associations may be another resource.

Mr. Don Onwiler (NCWM Executive Director) informed the group that the survey as most recently submitted to the Board by the PD Committee was accepted. The survey will include two free-form optional entries for feedback, one for the exam itself and one for the process of taking the exam. NCWM staff will review the responses and provide feedback to the PDC/Certification Coordinator.

The 2021 Interim Meeting was held virtually and immediately following the conclusion of the NCWM 2020 virtual meeting.

Mr. Robert Huff (Delaware) asked if NCWM had considered removing the requirement for proctoring. Mr. Hal Prince (Florida) indicated the Board discussed this possibility and the suspension of this requirement would jeopardize the integrity of the exams and would preclude ever reaching accreditation. We are actively pursuing online proctoring and are hopeful this is something that can be offered soon. Mr. Huff pointed out the decline in participation is obvious and those that would like to renew are quite possibly unable to do so. Mr. Ethan Bogren (Westchester County, New York) indicated his support for exploring remote proctoring and that currently, lack of access to proctoring is preventing access to the exams for his jurisdiction. Mr. Bogren continued to suggest if access to the exams and/or proctoring was offered as a benefit of NCWM membership, it could be of value to inspectors, and promote growth of the membership. Ms. Kirsten Macey (California) asked how remote proctoring would work. Mr. Jerry Buendel (Washington, retired) indicated there are several providers and tiers of service and they are all being explored. Ms. Angela Godwin (Ventura County, California) indicated remote proctoring is a real need.

During the Committee work session on January 14, 2021, the members reviewed the post exam surveys provided by NCWM. Mr. Jerry Buendel (Washington, retired), Certification Program Coordinator, compiled the results and presented the information to the Committee. The Committee observed that too few examinees were reviewing the learning objectives in the respective exam module prior to taking the exam. The Committee recommended a review of the NCWM website to determine if examinees were clearly instructed to review the modules and if the modules were easily accessible. Two survey respondents indicated that it would be beneficial to have a two-step process to indicate that they had completed the section and that their submissions were final. Mr. Paul Floyd (Louisiana) commented that Louisiana was requiring more inspectors to take exams. He noted that the inspectors had a better grasp of the principles of operation and device exam requirements and as a result were doing more thorough inspections and were more confident in their findings and determinations.

The members of the Professional Development Committee also discussed the expiration dates of individual certifications during the work session. The Committee recommends that the Board of Directors take action to extend the dates of all certifications expiring between March 2020 and August 2021 to September 2021. The Committee recognized the difficulties of taking the exams because of restrictions caused by the pandemic as well as the barriers associated with proctoring. The Committee noted that some jurisdictions or service companies may be using the exams to justify promotions or require an employee maintain current certification(s) in order to maintain their current job classification and salary. Mr. Buendel stated that the tests are reviewed annually to determine if any changes made to the Handbooks would require changes to the exam questions. He went on to say that in the past three years he has made only two changes to current exam questions. The Committee also discussed the precedent that would be set by extending the expiration and concluded that the current extraordinary circumstances warrant an extension.

The 2021 Annual Meeting was held in an in-person and online hybrid meeting session. Comments were received in person and from members online. Several comments were heard about the difficulty and scope of the exams, particularly when qualifying Registered Service Agents (RSAs). Mr. Scott Simmons (Colorado) reported that Colorado tried to use the measuring basic competency exam as part of their RSA licensing program. Of the three service companies that had technicians attempt the exam, there was a high failure rate, and Colorado concluded that it was too difficult and too broad in scope for the purpose of RSA licensing. Mr. Simmons suggested that an exam that was narrower in scope could be used for testing RSAs in Colorado. Mr. Greg Vander Plaats (Minnesota) said that the basic competency exams are too broad for use in registering or licensing service technicians, specifically those who specialize in a single device type or class. They also do not charge their RSAs when testing, so moving to the NCWM test would result in incurring a charge that does not currently apply. He also thanked the Board for approving virtual proctoring and encouraged their continued use. Mr. Kevin Schnepp (California) added that the general basic

competency exams would not work for state licensing requirements and suggested the exams be written for specific device types. Mr. David Boykin (NCR) stated the basic competency exam was too broad. His company deals with POS systems, and the exam covers devices not serviced by NCR technicians. Mr. Loren Minnich (Kansas) testified that the state laws and regulations were a barrier to using the current basic competency exams. There is some privatization in Kansas and some businesses service very specific device types such that a general exam would not always be appropriate, and in some cases, Kansas provides a special exam. Mr. Minnich suggested that there be a way to mark questions during an exam that the test taker thought should be reviewed by NCWM for clarity and consistency.

Mr. Minnich asked about the importance of accreditation. Mr. Buendel explained that accreditation would give the program additional credibility and would assure that we have rigorous processes in place to operate the testing program.

Mr. Floyd suggested the exams and questions be reviewed periodically and was concerned about the question review process' impact on accreditation. Mr. Chesser asked what certification meant and why certifications are good for five years. Mr. Buendel explained that certification demonstrates a thorough understanding of the national technical requirements and their application in regulatory inspections. Five years was selected based on the rate of change to the Handbooks and logical best fit for time between tests.

Mr. Kurt Floren (Los Angeles County, California) suggested we consider dividing exams to have one section cover specific devices and another section tailored to cover a jurisdiction's laws and regulations; both exams should include input from the respective state. For example, there could be a pool of 100 questions, and the state could select from these and add their own state-specific requirements questions.

Mr. Chesser asked where we found Subject Matter Experts (SMEs). Mr. Buendel stated that there are various means of identifying SMEs including a request for assistance via the list serve, participation in the conference, and by their reputation in the weights and measures community.

Ms. Cheryl Ayer (New Hampshire) asked if it would be best to have some weights and measures officials take the competency exams so they can see what it entails to determine whether or not it will serve well for their service agents. Mr. Buendel appreciated the suggestion and agreed that it would be helpful.

Mrs. Tina Butcher (NIST OWM) shared that there has been some reluctance from state weights and measures officials to use the same test for state inspectors and RSAs. The Committee also heard comments that some jurisdictions have privatized and/or delegated some functions to RSAs.

In the Committee work session, the Committee decided to recommend the Board of Directors consider authorizing a Work Group to investigate further refining the NCWM testing program to include licensing programs for RSAs that could be utilized by individual states. This Work Group could address such issues as the need for additional, more specific competency exams, and variations in jurisdictional requirements, and how to address these to make the test more applicable to RSAs. The Committee also reviewed the results of the exam post-exam surveys.

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Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Professional Development Committee rather than the NCWM Professional Development Committee.)

At the WWMA 2019 Annual Meeting, the Committee heard no comments during the open hearings. The WWMA PDC fully supports the efforts of the NCWM PDC in developing additional exams, along with the administration and improvement of the current exams. The WWMA PDC is in agreement with the comments by Mr. Buendel and Mr. Floyd at the 2019 NCWM Annual Meeting that pursuing alternate sources for proctoring, e.g., publicly accessible learning/testing centers such as Pearson Vue, National College Testing Association, or existing government testing facilities, would help weights and measures jurisdictions and their employees as well as RSAs take these exams.

At the 2019 SWMA Annual Meeting, the Committee is recommending this item as an Information Item on the NCWM agenda.

At the 2019 NEWMA Interim Meeting, no comments were made from attendees. Mr. Andersen has retired from his position as the Professional Certification Program Coordinator. The Committee thanks Mr. Andersen for his many years of service and welcomes Mr. Buendel as the new Coordinator for this position.

At the 2019 CWMA Interim Meeting, Mr. Doug Musick (Kansas) commented that Kansas's legal team is not going to let them proctor because of legal liabilities. Mr. Musick would like the PD Committee to look into the Proctoring requirements. It was also indicated that some states will discontinue using the Professional Certification Program because of the proctoring requirements.

At the 2020 NCWM Interim Meeting, Dr. Bobby Fletcher, Jr. (Louisiana) stated that they have been successful in using state civil service offices and university testing facilities for proctoring NCWM exams. He also said that Louisiana uses successful completion of the exams in the personnel reallocation and promotion process. Mr. Mahesh Albuquerque (Colorado) reported that Colorado's inspectors are encouraged to take the exam. He also expressed concern that the basic exams are more difficult than the professional exams. He also asked if the basic exams could be more specific to device areas. Mr. Greg VanderPlaats (Minnesota) commented that the proctoring rules have made the exam process more difficult. Mr. Ramsburg stated that Maryland has not taken an exam since the proctoring requirements went into place. Mr. VanderPlaats added that proctoring is expensive. Mr. Ed Coleman (Tennessee) stated that the basic competency exams are more difficult than the professional exams. He also expressed concern that the test takers do not have an opportunity to see what questions they missed and the correct answers to those questions. Mr. Onwiler commented that he had completed an exam at a professional learning center and found them to be professional and easy to use. He noted that they charge a fee for their services. He stated that there are other testing organizations such as colleges or professional testing centers that may not need to sign the NCWM proctoring agreement. Mr. Onwiler announced that the Professional Certification Program has taken the first step in accreditation. NCWM has contracted with an accreditation organization to perform a gap analysis and we should have their report in two or three months. He will update the Committee in July.

At the WWMA 2020 Annual Meeting, no comments were received during open hearings regarding this item. The Committee recognizes the tremendous advantages and value of the NCWM's Professional Certification Program and appreciates the work that many in the community have contributed to the continued operation of the program. The Committee has read with interest the concerns that some have raised regarding the use of proctors and encourages the NCWM PDC to review this element of the program.

At the SWMA 2020 Annual Meeting, Chair Paul Floyd commented that efforts would be made to update the information in this item for the NCWM Annual Meeting. Mrs. Tina Butcher (NIST OWM) commented that the Western Association meeting discussed issues evolving around proctoring exams and additional resources from outside agencies that may need to be acquired. At the WWMA, several jurisdictions shared best practices and approaches for securing proctors. Mrs. Butcher also noted the NCWM PDC would be interested in hearing the experiences of and input from SWMA members on this issue. Chair Floyd commented that Louisiana has added another testing center, a smaller college in Central Louisiana, for both basic and professional exams. Mr. Ramsburg commented that they found proctoring was an issue since their Department of Agriculture in Maryland is relatively small, and they were looking for outside sources to assist in administering the exams. Mr. Ramsburg added that the PDC and NCWM missed an opportunity for more exams to be taken by not offering them in an easily accessible online format.

At the NEWMA 2020 Interim Meeting, during its open hearings, the Committee heard comments related to the implementation of proctoring for the NCWM Professional Certification Program Exams. Mr. Onwiler commented that jurisdictions are using various approaches to implement proctoring and shared an example of one state that is making use of universities and learning centers for this purpose, which Mr. Onwiler is happy to authorize. He noted there may be a cost for some of these proctoring arrangements and suggested that jurisdictions might consider exploring the possible use of AMC funds for training toward these costs. Mrs. Butcher noted that, during discussions at the recent Western and Southern Weights and Measures Association Meetings, jurisdictions shared different approaches they have used for proctoring. She suggested that perhaps this kind of shared information of best practices might be beneficial for jurisdictions seeking options to implement this. Mr. Andersen commented that there is a wealth of information and guidance on the NCWM website to assist jurisdictions in the process of securing proctors for these examinations. Mr. Jimmy Cassidy (Massachusetts) acknowledged the difficulty in coordinating proctoring. Particularly with the restrictions of the pandemic, certification and testing of inspectors seems to be at a standstill right

now. He encouraged the Committee to pursue the idea of exploring the use of AMC funding to help jurisdictions certify its inspectors. PDC Chairman Marc Paquette observed there is a need to ensure the integrity of the examination process. Regarding virtual training, he noted that Mrs. Butcher will share some of NIST's work in this area as part of the Committee's next item.

The Committee recognizes the advantages and value of the NCWM's Professional Certification Program and appreciates the work that many in the community have contributed to the continued operation of the program. After hearing some of the concerns regarding the use of proctors, the Committee encourages the NCWM PDC to review this element of the program to identify additional ways to assist jurisdictions in implementing it. The Committee acknowledges that the COVID-19 pandemic and its associated restrictions have been a setback to jurisdictions in many regards, particularly in the areas of training and certification. The Committee also suggested that the NCWM Board of Directors may wish to revisit the issue of proctoring and consider relaxing the proctoring until such time that jurisdictions can more readily implement it.

At the CWMA 2020 Interim Meeting, Mr. Onwiler shared that both Arkansas and Louisiana have asked for universities to be authorized to provide proctoring and have been granted that request. Mr. Onwiler mentioned that this may be an option for other states to explore as well. Mr. John Albert (Missouri) added via Zoom chat that Missouri's HR department has agreed to proctor the exams for their employees. Ms. Sherry Turvey (Kansas) and Ms. Brenda Geist (Kansas) reported that their HR department will not provide proctoring, but Barton County Community College has agreed to proctor and is charging by the hour. Ms. Rachelle Miller (Wisconsin) added that they have had a difficult time with proctoring with the pandemic restrictions but had been able to proctor themselves with the aid of other divisions. Ms. Miller also commented that the City of Milwaukee has done the same. Mr. Onwiler noted he has suggested that the states that are having issues with proctoring on a large scale could apply for Associate Membership Committee (AMC) funding for this purpose.

Mr. VanderPlaats shared the fact that Minnesota has not done any professional certification tests since the proctoring requirement was put in place. They used the testing heavily before that but are having difficulties finding the time to find anyone to proctor for them.

EDU-2 I Training

NOTE: The 105th Annual Meeting was a virtual event due to the COVID-19 pandemic. To streamline the event, Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

The purpose of this item is to share best practices and approaches to training in response to the broad training needs of weights and measures jurisdictions and to serve as a link to various training materials on the web.

At the 2019 Interim Meeting, the Committee was asked to consider reviewing and potentially updating/reintroducing the old NIST OWM training modules. The Committee agreed to investigate whether these modules are still available in digital form. Mr. Ross Andersen (New York, retired) indicated that NIST has extensive training materials that we could leverage; requesting these materials from NIST may be beneficial.

The Committee also heard updates from several sources announcing upcoming device training hosted by Kansas and about upcoming combined NIST regional weights and measures metrology training. Three states recommended that NCWM and NIST OWM consider joint development of training videos and investigate funding from additional sources such as grants.

At the 2019 NCWM Annual Meeting, Mr. Christopher Guay (AMC, Procter & Gamble) asked if webinars or other NIST training could be made available to associate members or industry in general. Mrs. Tina Butcher (NIST OWM) responded by indicating that such training is already possible on an as-available basis.

At the 2020 NCWM Interim Meeting, Mrs. Butcher has continued to provide updates on training provided to the weights and measures community by NIST OWM. During the Committee's 2020 NCWM Interim Meeting open hearings, Mrs. Butcher presented the following updated information, which includes NIST OWM training conducted

in calendar year 2019 as well as training planned for 2020. Based upon a previous request from the Committee, these updates are based on the calendar year. Mrs. Butcher noted that some training events listed for 2020 are still being negotiated with the hosts so specific dates are not yet available.

A complete list of upcoming OWM training events is available on the calendar of events on the OWM website at www.nist.gov/pml/weights-and-measures/about-owm/calendar-events.

Mrs. Butcher encouraged those interested in a training event to review the details for the event on OWM's website for information such as the availability of the class, intended audience, and any prerequisites.

NIST OWM Training Conducted in 2019			
Area/Course Name	Start Date	Location	Number of Students
Laboratory Metrology			
Advanced Mass Seminar	04/29/19	Gaithersburg, Maryland	9
Balance & Scale Proficiency Testing	06/03/19	Gaithersburg, Maryland	8
Fundamentals of Metrology	03/04/19	Gaithersburg, Maryland	7
	03/11/19	Gaithersburg, Maryland	9
	03/18/19	Gaithersburg, Maryland	10
	08/05/19	Gaithersburg, Maryland	9
	08/19/19	Gaithersburg, Maryland	8
Mass Metrology Seminar	04/18/19	Gaithersburg, Maryland	9
	10/21/19	Gaithersburg, Maryland	10
Volume Metrology Seminar	08/12/19	Gaithersburg, Maryland	12
Regional Measurement Assurance Programs			
Combined Regional MAP	05/31/19	Lake Mary, Florida	107
CRMAP Tutorial 1 – Balance and Scale Calibration Uncertainties	05/31/19	Lake Mary, Florida	20
CRMAP Tutorial 2 – Calibration & Use of Thermometers	05/31/19	Lake Mary, Florida	16
CRMAP Tutorial 3 – Workshop on Assessing & Reporting Uncertainties	05/31/19	Lake Mary, Florida	16
Info Hours			
Info Hour – Annual Submission Process	08/20/19	Web-based	53
Info Hour – Mass Traceability at NIST in the revised SI	12/02/19	Web-based	83
Webinars			
Basic Uncertainty Concepts	04/24/19	Web-based	9
Calibration Certificate Evaluation	08/06/19	Web-based	5
Conducting an Effective Management Review	03/07/19	Web-based	10
Contract Review	08/15/19	Web-based	16

NIST OWM Training Conducted in 2019			
Area/Course Name	Start Date	Location	Number of Students
Document Control and Record Keeping	08/29/19	Web-based	14
Internal Auditing Best Practices	02/21/19	Web-based	6
	11/14/19	Web-based	8
Mass Calibration at NIST in the Revised SI	12/10/19	Web-based	83
Software Verification & Validation	04/11/19	Web-based	7
State Laboratory Annual Submission Process	09/12/19	Web-based	70
Packaging & Price Verification			
NIST HB 130 – Uniform Pkg & Label Regs	10/28/19	Avenel, New Jersey	16
NIST HB 133 – Checking the Net Contents of Packaged Goods, Basic	04/01/19	Gaithersburg, Maryland	10
	04/15/19	Glendale, Arizona	18
	11/05/19	Santa Rosa, California	16
NIST HB 133 – Checking the Net Contents of Packaged Goods, Overview	10/16/19	Richmond, Virginia	27
Webinars			
NIST HB 130 – Price Verification	06/18/19	Web-based	17
NIST HB 130 – Uniform Pkg & Labeling Reg	06/19/19	Web-based	10
NIST HB 133 – Pkg & Labeling Overview	09/03/19	Web-based (New Jersey W&M Association)	75
Legal Metrology Devices			
Audit Trails – Overview	09/11/19	Park City, Utah (WWMA)	75
Retail Motor-Fuel Dispensers – Short (3-day)	05/06/19	Canton, Ohio (CWMA)	24
	09/09/19	Park City, Utah (WWMA)	13
Liquefied Petroleum Gas Liquid-Measuring Systems	06/24/19	Nashville, Tennessee	16
Vehicle-Tank Meters & Loading-Rack Meters, Combined	06/10/19	Lawrence, Kansas	26
Webinars			
Audit Trails – Overview	09/04/19	Web-based (New Jersey W&M Association)	75

NIST OWM Training Scheduled for 2020		
Area/Course Name	Dates	Location
Laboratory Metrology		

NIST OWM Training Scheduled for 2020		
Area/Course Name	Dates	Location
Advanced Mass Seminar	06/01/20	Gaithersburg, Maryland
Balance and Scale Calibration Uncertainties	01/27/20	Gaithersburg, Maryland
Balance and Scale Calibration Uncertainties – IAAO Participants Only	07/13/20	Gaithersburg, Maryland
Fundamentals of Metrology	02/03/20	Gaithersburg, Maryland
	02/10/20	Gaithersburg, Maryland
Fundamentals of Metrology – IAAO Participants Only	07/20/20	Gaithersburg, Maryland
Mass Metrology Seminar	03/02/20	
	10/19/20	Gaithersburg, Maryland
Volume Metrology Seminar	04/20/20	Gaithersburg, Maryland
Regional Measurement Assurance Programs		
Southeast Measurement Assurance Program	03/23/20	Frankfort, Kentucky
Western Regional Assurance Program	05/04/20	Sparks, Nevada
Northeast Measurement Assurance Program	09/14/20	Hartford, Connecticut
Southwest Assurance Program	09/28/20	Las Cruces, New Mexico
MidAmerica Measurement Assurance Program	10/05/20	Indianapolis, Indiana
Webinars		
Basic Uncertainty Concepts	03/05/20	Web-based
Calibration Certificate Evaluation (2-day session)	01/23/20	Web-based
Conducting an Effective Management Review	02/13/20	Web-based
Internal Auditing Best Practices	02/27/20	Web-based
Measurement Systems for Legal Metrology	08/12/20	Web-based
Software Verification & Validation	02/20/20	Web-based
Packaging & Price Verification		
NIST HB 130 – Uniform Packaging/Labeling Regs	05/18/20	Sacramento, California
NIST HB 133 – Checking Net Contents of Packaged Goods, Basic	05/04/20	Saratoga Springs, New York (NEWMA)
Webinars		
NIST HB 130 – Price Verification	03/05/20	Web-based
	07/22/20	Web-based
NIST HB 130 – Overview Packaging\Labeling Reg	03/26/20	Web-based
	07/23/20	Web-based
NIST HB 133 – Checking Net Contents of Packaged Goods - Overview	08/05/20	Web-based
Legal Metrology Devices		

NIST OWM Training Scheduled for 2020		
Area/Course Name	Dates	Location
High-Precision Scales	05/19/20	Wisconsin Dells, Wisconsin (CWMA)
Liquefied Petroleum Gas Liquid-Measuring Systems	06/08/20	Sioux Falls, South Dakota
Retail Motor-Fuel Dispensers	5/11/20 (tentative)	[City TBD], Louisiana
Vehicle and Axle-Load Scales	Fall 2020	Harrisonburg, Virginia
Vehicle-Tank Meters (by invitation only)	04/27/20	[City TBD], California
Webinars		
Reading Test Measures & Provers	Spring/Summer 2020	Web-based

Mrs. Butcher thanked the jurisdictions who have hosted the many NIST training seminars, recognizing the effort required to host these events and coordinate the logistics. She also recognized co-instructors who have assisted in presenting these events.

At the 2021 NCWM Annual Meeting, the Committee also heard updates from several sources announcing upcoming device training hosted by Kansas and about upcoming combined NIST regional weights and measures metrology training. Three states recommended that NCWM and NIST OWM consider joint development of training videos and investigate funding from additional sources such as grants.

Mrs. Butcher provided the following “Summary of NIST OWM Training Conducted in 2020”, along with information regarding other training and professional development resources OWM has provided for weights and measures jurisdictions and service companies in the past year, including projects to assist those whose activities were restricted due to the COVID-19 pandemic.

Summary of NIST OWM Training Conducted in 2020			
Area/Course Name	Start Date	Location	No. of Students
Laboratory Metrology			
Balance & Scale Calibration Uncertainties	01/27/20	Gaithersburg, Maryland	8
Fundamentals of Metrology	02/03/20	Gaithersburg, Maryland	8
	02/10/20	Gaithersburg, Maryland	8
Fundamentals of Metrology & LAP Problems Preparation	9/16/20	Web-based	8
Mass Metrology Seminar	03/02/20	Gaithersburg, Maryland	8
Regional Measurement Assurance Programs			
MidMAP	10/06/20	Web-based	24
NEMAP	04/20/20	Web-based	16
SEMAP	04/20/20	Web-based	33
SWAP	05/04/20	Web-based	24
WRAP	05/04/20	Web-based	27
Webinars			
Basic Uncertainty Concepts	03/05/20	Web-based	3
Calibration Certificate Evaluation	02/25/20	Web-based	12
Conducting an Effective Management Review	02/13/20	Web-based	12
Info Hour – Mentoring and On-the-Job Training	08/04/20	Web-based	58
Info Hour – Quality Management System & SAP Reviews	10/13/20	Web-based	58

Summary of NIST OWM Training Conducted in 2020			
Area/Course Name	Start Date	Location	No. of Students
Internal Auditing Best Practices	02/27/20	Web-based	14
Software Verification & Validation	02/20/20	Web-based	6
State Laboratory Annual Submission Process	09/10/20	Web-based	95
Laws and Metric Program			
Packaging & Price Verification			
NIST Handbook 130 – Examination Procedure for Price Verification <i>13 Sessions:</i> 03/25/20; 04/08/20; 04/13/20; 04/14/20; 04/16/20; 04/20/20; 04/21/20; 05/19/20; 06/16/20; 07/22/20; 09/22/20; 10/14/20; 12/01/20	13 sessions May to Dec 2020	Web-based	Total 599
NIST Handbook 130 – Overview of the Uniform Packaging and Labeling Regulation <i>11 Sessions:</i> 03/26/20; 04/09/20; 04/15/20; 04/17/20; 04/22/20; 04/24/20; 05/21/20; 06/17/20; 07/23/20; 10/14/20; 12/1/20	11 sessions March to Dec 2020	Web-based	Total 562
NIST Handbook 133 – Checking the Net Contents of Packaged Goods <i>8 Sessions:</i> 04/23/20; 04/27/20; 04/29/20; 04/30/20; 05/20/20; 06/18/20; 08/05/20; 10/15/20	8 sessions April to Oct 2020	Web-based	Total 420
NIST Handbook 133 – How to Test Animal Bedding <i>6 Sessions:</i> 09/21/20; 09/30/20; 10/8/20; 10/21/20; 11/18/20; 12/09/20	6 sessions Sept to Dec 2020	Web-based	Total 179
NIST Handbook 133 – Overview of Handbook 133	12/03/20	Web-based	74
Weights and Measures Inspections – Evidence, Search and Seizure, and Due Process <i>6 Sessions:</i> 09/22/20; 10/01/20; 10/08/20; 10/20/20; 11/17/20; 12/08/20	6 sessions Sept to Dec 2020	Web-based	Total 613
Metric Education			
Info Session – Metric Education Resources	09/12/20	Web-based	9
	09/30/20	Web-based	6
Info Session – Metric Estimation	09/16/20	Web-based	4
	09/26/20	Web-based	6
Measurement System Basics – SI and US Customary Units for Regulatory Officials	08/12/20	Web-based	65
	10/21/20	Web-based	68
Legal Metrology Devices			
No training seminars were offered in 2020.	--	--	--

A summary of activities in each OWM Program area follows.

Laboratory Metrology Program

The following summarizes activities in the NIST OWM Laboratory Metrology Program:

General. The Laboratory Metrology Program conducted several in-person classes prior to the COVID-19 pandemic restrictions imposed in March 2020. This program also developed a web-based Fundamentals of Metrology and LAP Problems Preparation Course. These courses will be used to provide formalized training to new Metrology staff until in-person training resumes.

OWM is also pleased to announce that Dr. Micheal Hicks was appointed as Program Leader for the NIST OWM Laboratory Metrology Program in Fall 2020.

Regional Metrology Association Training. All regional metrology association training was converted to a virtual format and the training was conducted online. Special topics included “Roundtable Discussions” and “Proficiency Testing Reporting and Planning.”

Upcoming Lab Program Training. The Laboratory Program is continuing to schedule online training as outlined in the OWM Calendar of Events. The Program is scheduling some on-site training for June 2021; however, the plans to conduct this training on-site is contingent upon the re-opening of the NIST campus. As the date of the training approaches, there may be a need to shift the training to a virtual format. Consequently, registered students are cautioned *NOT* to make travel arrangements pending written confirmation. Note that the decision to propose this particular training in an in-person format so far in advance in light of the uncertainty of conditions is based on the States’ laboratory metrologists’ dependency on training required for designated signatories for calibration services and OWM’s long lead time for securing contract trainers.

Laws and Metric Program

General. The Laws and Metric Program cancelled all previously scheduled in-person courses as of April 2020 due to the COVID-19 pandemic. As of June 2020, OWM opened its webinars to industry at no charge. All “in-person” field inspection classes are postponed until further notice. OWM is not currently scheduling any in-person field inspection classes for the 2021 calendar year.

Webinar Offerings. Since April 2020, a total of 2,352 students have participated in Laws and Metric Program webinars. This includes training for 2,194 students in the area of Laws and Regulations and training for 158 students in other Laws and Metric Program areas.

In April 2020, the Laws and Metric Program’s David Sefcik began offering three previously developed webinars and continued offering these at periodic intervals through December 2020.

- Examination Procedure for Price Verification, NIST HB 130 (2 hr)
- Overview of the NIST HB 130 Uniform Package and Labeling (UPLR) and Uniform Method of Sale (MOS) of Commodities Regulations (2 hr)
- “NIST Handbook 133 – Checking the Net Contents of Packaged Goods - Overview” (2.5 hr)

In September 2020, the Laws and Metric Program began offering three new webinars developed by Ken Butcher and presented by David Sefcik. These were offered at periodic intervals through December 2020.

- NIST Handbook 133 – How to Test Animal Bedding
 - Covers the different types of animal bedding, method of sale, test equipment, audit and test procedure, and documentation and evaluation of test results.
- NIST Handbook 133 – Overview of Handbook 133
 - Covers the different types of mulch and soil and how they are sold (method of sale), the labeling requirements, test equipment, sampling (and alternative sampling), test procedure, and evaluation of test results.
- Weights and Measures Inspections – Evidence, Search and Seizure, and Due Process
 - Provides an overview on how the U.S. Constitution, the Bill of Rights, Laws, and Court decisions control how weights and measures inspections must be conducted. You will learn about the powers and duties

of the Director and the special police powers of an official, as outlined in NIST Handbook 130, Uniform Weights and Measures Law.

- Topics include a checklist for “opening” and “closing” an inspection; consent; search and seizures under the 4th Amendment of the U.S. Constitution; defining evidence and provide suggestions on collecting, protecting and using it to support enforcement actions evidence; enforcement actions and recommended compliance procedures; and model guidelines for the administrative review process.

Legal Metrology Devices Program

General. As with the two other OWM program areas, the Devices Program was forced to postpone the following training courses originally scheduled during the period of April 2020 to May 2021:

- High Precision Scales (CWMA)
- Vehicle Scales (Virginia)
- Liquefied Petroleum Gas Liquid-Measuring Devices (South Dakota)
- Retail Motor-Fuel Dispensers (Louisiana)
- Vehicle-Tank Meters (California)
- Vehicle-Tank Meters (Alabama)

All “in-person” field inspection classes are postponed until further notice. OWM is not currently scheduling any in-person field inspection classes for the 2021 calendar year.

While the Devices Program did not have materials ready to present in a virtual format, the Devices Program staff worked to develop other tools and information that could assist weights and measures officials and service personnel working from home on their personal professional development during the restrictions of the pandemic. The Devices Program is exploring the development of webinars in the device inspection area.

Study Guides. Mr. John Barton, Mrs. Butcher, and Ms. Diane Lee of the Devices Program staff, along with Ms. Lisa Warfield of the Laws and Metric Program staff, developed a series of seven “study guides” to assist field inspectors and service personnel working from home or otherwise restricted from routine activities during the COVID-19 pandemic. These study guides are designed for use by weights and measures officials and service personnel to enhance and strengthen their knowledge of specific areas of legal metrology inspection and testing and are intended for use even after the restrictions of the pandemic are lifted.

The study guides are not intended to be a comprehensive summary of all training and development opportunities recommended for inspectors working in a specific topic area. Rather, they are intended to help individuals in their professional development by targeting the use of information and resources available on the NIST OWM website. Study guides are particularly ideal for use by individuals who are working remotely and are striving to enhance and strengthen their technical knowledge.

Included in each study guide are the following:

- An overview of resources available on the NIST OWM website, including self-study course material; videos; and newsletter articles and guidance documents on legal metrology issues.
- Suggestions for how each of these resources might be used for either independent, individual study or by groups of inspectors/service personnel led by an instructor or supervisor.
- Information on other training opportunities, including both on-line training and in-person instructor-led training and other resources for professional development.

- These study guides are intended for use in conjunction with other resources on the NIST OWM website, including Handbooks 44, 130, and 133.

Study guides have been developed and posted on OWM’s website for the following field inspection areas:

- Grain Moisture Meters and NIR Grain Analyzers
- Measuring – Retail Motor-Fuel Dispensers
- Measuring – Large Meters
- Measuring - Liquefied Petroleum Gas Liquid-Measuring Devices
- Packaging and Labeling Inspections
- Weighing – Small Scales
- Weighing – Large Scales

These study guides are available for download free of charge at following link:

www.nist.gov/pml/weights-and-measures/legal-metrology-devices/training-materials#studyguides

Technical Article and Knowledge Check for Self-Study. Mr. Rick Harshman (NIST OWM) of the Devices Program developed a Technical Article titled “Making Sense of “Min” on Class I and Class II Scales.” This explains the concept of “Min” and provides guidance on its use and application in transactions encountered by jurisdictions which are reportedly regulating a growing number of Class I and Class II scales.

Mr. Harshman and Mrs. Butcher also developed a new feature called a “Knowledge Check” to accompany this article. The Knowledge Check serves as a tool for jurisdictions who might want to quiz their employees on their knowledge retention after assigning them the task of reading the article. Depending on feedback, the Devices Program may include Knowledge Checks as a regular accompaniment to its technical articles.

General – OWM Training

Mrs. Butcher reported all NIST OWM “in-person” field inspection classes are postponed until further notice. OWM is not currently scheduling any in-person field inspection classes for the 2021 calendar year. This does not include the training referenced under the Laboratory Metrology Program’s summary that is tentatively scheduled for June 2020 if conditions permit.

OWM is not currently making specific commitments for field inspection training pending changes in restrictions related to the COVID-19 situation that would help ensure the safety of its students and staff involved in such training and traveling to attend these events. OWM will continue to assess these conditions as the situation unfolds.

It is unclear how pandemic-related restrictions will affect OWM’s in-person training in the future. The decision to resume in-person classes will be driven by Centers for Disease Control recommendations, local pandemic restrictions, and travel restrictions for staff and students. OWM is also considering the impact of social distancing requirements on classroom size and configuration and ability to present to groups.

In the meantime, OWM will continue to offer virtual training and plans to expand its offerings. Mrs. Butcher encouraged those interested in upcoming training to consult OWM’s Calendar of Events for the most current information:

www.nist.gov/news-events/upcoming-events/org/6436

Mrs. Butcher shared that, in the latter months of 2020, a team of training developers and facilitators within OWM began working to consider how OWM might restructure its training program to include more virtual offerings. In addition to considering which existing (or yet-to-be-developed) courses might lend themselves to training in a virtual format, this team has discussed the importance of incorporating some equivalent of the “hands-on” element that is a cornerstone of field inspection courses and the distinction between training and technical presentations. OWM is exploring the idea that, should resources permit it, it may be possible to record some webinar offerings at some point in the future; these could possibly be made available “on demand” and accompanied by periodic question and answer sessions with a live instructor. OWM is continuing to explore the use of technology and available features to adapt its courses to a virtual format and is also considering whether a “hybrid” approach might be used, in which a portion of an existing course could be presented virtually followed by smaller, in-person classes to incorporate a hands-on demonstration and student assessment.

While this shift in thinking was driven initially by the restrictions of the COVID-19 pandemic, OWM has recognized the value of providing virtual courses and training events as a way of providing more training opportunities to a larger number of OWM customers. Thus, while OWM expects to resume offering in-person training opportunities when conditions once again permit, OWM sees the value of continuing to include a virtual component to its training even when pandemic restrictions are lifted.

As OWM considers how to best expand its virtual training offerings, OWM staff have been experimenting with available technology and tools to best incorporate elements of “hands on” activities that are so important to its field inspection training courses. OWM is also considering the development of “hybrid” courses in which virtual sessions are coupled with “hands on” sessions using virtual technology and/or local onsite trainers to help facilitate these sessions. Such hybrid courses would be intended for use both during the COVID-19 pandemic and after the associated restrictions are lifted.

Mrs. Butcher reported that NIST OWM is outfitting a space at NIST OWM specifically suited to conduct virtual training events and web-based meetings. OWM trainers are continuing to participate in a variety of training courses as part of their own professional development, including education in virtual training design, development, and delivery as well as instructional design.

Mrs. Butcher once again thanked the jurisdictions who have hosted the many “in-person” NIST training seminars in the past, recognizing the effort required to host these events and coordinate the logistics. She also recognized co-instructors who have assisted in presenting these events. NIST OWM looks forward to continued work with the weights and measures community to develop and implement training to assist weights and measures officials and service personnel in their continued professional development.

NCWM Meeting Comments:

At the NCWM 2021 Interim Meeting, the 2021 Interim Meeting was held virtually and immediately following the conclusion of the NCWM 2020 virtual meeting. Ms. Cheryl Ayer (New Hampshire) asked if NIST OWM was continuing work on providing an on-demand video for small capacity scale field inspection. Mr. Doug Olson (NIST OWM) and Mrs. Tina Butcher (NIST OWM) both indicated the plan was to continue that project. Multiple comments from the membership were heard thanking NIST OWM for the training provided. The comments indicated this training was invaluable during the pandemic.

The 2021 NCWM Annual Meeting was held in an in person and online hybrid meeting session. Comments were received in person and from members online. During the 2021 Annual Meeting open hearings, an updated presentation was given on NIST training activity. The updates have been included in Appendix B of this report.

Ms. Cheryl Ayer (New Hampshire) indicated her support for hybrid and virtual training and pointed out that there is cost savings with no need to travel, etc.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Professional Development Committee rather than the NCWM Professional Development Committee.)

At the 2019 WWMA Annual Meeting, the Professional Development Committee heard the following comments during open hearings:

Mr. Stan Toy (Santa Clara County, California) would like to see training in the handling, maintenance, storage, and use of Class II Field Standards that are used for the testing of precision scales. In addition, Mr. Toy recommended training on the inspection and testing of precision scales. The WWMA PDC would also like to see training in the safe handling of packaged products such as fresh meats, poultry, and seafood to avoid contamination and allow for resale of tested commodities. The WWMA PDC discussed that it might be helpful that existing NIST classroom training be offered by live stream in order to provide greater accessibility to both weights and measures jurisdictions and industry.

At the 2019 SWMA Annual Meeting, the SWMA Professional Development Committee is recommending this item as an Information Item on the NCWM agenda.

At the 2019 NEWMA Interim Meeting, Mr. Jimmy Cassidy (Massachusetts) and Mr. Ethan Brogan (Westchester County, New York) are looking for training topics for the 2020 NEWMA Annual Meeting to be held in Saratoga Springs, New York. Possible topics discussed included a short course on package checking or LPG Meters.

At the 2019 CWMA Interim Meeting, Ms. Rachelle Miller (Wisconsin) informed the Committee that the 2020 CWMA Annual Meeting to be held at Wisconsin Dells, Wisconsin will host a Class II scale training class. Mr. Loren Minnich (Kansas) suggested retail computing, medium scale and Vehicle Scale Training be offered more often for new employees. CWMA is the only region that has offered any of these classes in the last couple of years. Ms. Lori Jacobson (South Dakota) stated concerns with Metrology Classes, classes are offered back-to-back and if a metrologist is required to have lab time in between classes there is not enough time between the classes. Proposed the Committee have a discussion with NIST about spreading out classes. Lori also suggested training for heavy scale inspectors.

At the 2020 NCWM Interim Meeting, the Committee heard comments from several people who commented jointly on Item EDU-2 and EDU-3. Ms. Fran Elson-Houston (Ohio) expressed appreciation for the NIST seminars. She also noted that her agency is not always able to provide raises or monetary recognition for employees, but she has found that another way to reward and leverage good employees is providing them the opportunity to participate in train-the-trainer type of education and present training seminars. Mr. Doug Rathbun (Illinois) echoed Ms. Elson-Houston's comments regarding the value of NIST classes. Mr. Charlie Stutesman (Kansas) also recognized the value of the NIST seminars and noted, that jurisdictions or individuals who are aware of NIST training and are not leveraging this training are missing out on a great opportunity for quality education.

At the 2020 WWMA Annual Meeting, Mrs. Tina Butcher (NIST OWM) provided a presentation on NIST OWM training activities during the period of January to July. Mrs. Butcher noted that this presentation was provided during the NCWM PDC's virtual meeting in July 2020. Mrs. Butcher highlighted OWM's efforts to support weights and measures jurisdictions by providing training and other professional development materials in a virtual format during the time that restrictions of the COVID-19 pandemic prevented field inspectors and service personnel from working in field installations.

Mrs. Butcher also noted OWM is taking the opportunity to consider how this virtual training might be incorporated into OWM's regular training offerings and rather than just adding in virtual classes. OWM is trying to be strategic in considering how virtual offerings can be integrated into OWM's overall training program even following the pandemic. In the future, OWM may offer multiple formats and consider hybrid approaches such as presenting the lecture portions online and conducting hands-on portions in person with smaller classes held back-to-back. OWM is considering various approaches that might not only help its trainers to continue to provide training during the pandemic restrictions, but that would also allow OWM to reach more people than is possible with in-person classes alone. OWM is mindful that a very important part of the in-person classes is the hands-on portion, so it is necessary to consider different options to ensure what is provided will still meet the needs of the jurisdictions and students. There may be various combinations of options that could be used.

The Committee heard comments from Ms. Cadence Matijevich (Nevada) who commented that Nevada appreciates all the work that NIST did to provide virtual training during the pandemic. The options provided allowed field inspectors who were not able to do normal inspection work to spend time on professional development, making lemonade out of lemons. Ms. Matijevich expressed an appreciation for all the training and resources provided by NIST OWM. Ms.

Michelle Wilson (Arizona) echoed Ms. Matijevich's comments. Ms. Wilson asked if NIST has considered recording training events and posting the videos as "on demand" training, noting this would be particularly helpful for new inspectors. Ms. Wilson also asked about the use of field trainers to supplement the "hands on" portion of classes, with the idea that the field trainers might be able to conduct demonstrations to accompany the online training. Ms. Kathy de Contreras (California Division of Measurement Standards (DMS)) encouraged NIST to continue to offer these types of classes and the use of webinars and train-the-trainers.

Mrs. Butcher noted OWM has considered the idea of on-demand training. A drawback, particularly for more complex topics, is the lack of ability for a student to ask questions during the seminar. However, OWM has also considered the idea of developing recorded presentations and supplementing that with periodic Q&A sessions as a follow-up. She noted OWM is also open to ideas for ways to incorporate alternatives for the hands-on portions through video and other technology links with field sites.

At the SWMA 2020 Annual Meeting, Mrs. Tina Butcher (NIST OWM) gave a presentation on EDU – 2, which included an overview of web-based training and other developmental resources offered by NIST OWM between January and July 2020. The presentation gave statistics on participants the program reached. Mr. Paul Floyd (Louisiana) thanked Mrs. Butcher and NIST OWM for developing and offering the webinars. Mr. Phillip Wright (Texas) followed up with comments thanking Mrs. Butcher and NIST OWM and that he was encouraged to see the direction of the training program. Mr. Kenneth Ramsburg (Maryland) again thanked NIST OWM for being supportive and producing a robust training program and said he and his staff appreciated the trainings and attended trainings for price verification and Laboratory Metrology. Mr. Ramsburg also commented that webinars for service companies and technicians would be beneficial beginning with the retail motor fuel dispenser companies. He noted that, due to pandemic restrictions, service companies are not attending their jurisdiction's normal service person training; with the relatively high turnover in the service industry, this has created a gap in service personnel's knowledge of legal metrology requirements. Mr. Ed Coleman (Tennessee) thanked NIST OWM for the trainings and agreed with Mr. Ramsburg that a webinar program for Service Companies and Technicians would be a great addition.

At the 2020 NEWMA Interim Meeting, Mrs. Tina Butcher (NIST OWM) provided a presentation on NIST OWM training activities during the period of January to July 2020. She noted that this presentation was provided during the NCWM PDC's virtual meeting in July 2020. Mrs. Butcher highlighted OWM's efforts to support weights and measures jurisdictions by providing training and other professional development materials in a virtual format during the time that restrictions of the COVID-19 pandemic prevented field inspectors and service personnel from working in field installations. She noted the shift to include more virtual training options has a profound impact on OWM's ability to reach more people than it can for in-person classes alone. Mrs. Butcher also noted OWM is taking the opportunity to consider how this virtual training might be incorporated into OWM's regular training offerings rather than just adding in virtual classes. OWM is considering how virtual offerings can be integrated into OWM's overall training program even following the pandemic. In the future, OWM may offer multiple formats and consider hybrid approaches, such as presenting the lecture portions online and conducting hands-on portions in person with smaller classes held back-to-back. OWM is considering various approaches that might not only help its trainers to continue to provide training during the pandemic restrictions, but that would also allow OWM to reach more people than is possible with in-person classes alone. OWM is mindful that a very important part of the in-person classes is the hands-on portion, so it is necessary to consider different options to ensure what is provided will still meet the needs of the jurisdictions and students. There may be various combinations of options that could be used.

The Committee heard comments from Ms. Cheryl Ayer (New Hampshire), who expressed interest in having this training available to service agencies and the possibility of including online videos of the webinars that could be viewed by service agencies. Mrs. Butcher noted that, while NIST's training has been oriented to support regulatory officials in their implementation of NIST standards and test procedures, industry has been welcomed into many classes and NIST would continue to do so. Mrs. Butcher commented that having an industry presence in classes has been very beneficial to both the industry participants and regulators alike. Mrs. Butcher noted OWM has discussed the possibility of recording webinars for future viewing and work is underway in one area of training to explore this possibility. In the meantime, OWM will focus on increasing its virtual options. Mrs. Butcher also noted that, given the complexity of the material, students will likely have questions about specific elements of a training session. OWM is considering how to incorporate this into its structure, considering possibilities such as posting of frequent questions supplemented by periodic live question and answer webinar sessions on a given class with a live instructor. Mr. Ross

Andersen (New York, retired) commented that he has developed and posted videos on YouTube on the technical issue of “d” and “e” and encourages others to share similar technical topics via YouTube. While not speaking to the videos posted by Mr. Andersen, Ms. Ayer commented jurisdictions need to ensure the validity and accuracy of procedures illustrated in videos posted on YouTube. Mr. Andersen noted the authors of such videos would need to take responsibility for ensuring that accuracy.

PDC Chair Mr. Marc Paquette observed his staff found the NIST offerings to be very beneficial and made specific recognition of a newly offered NIST OWM webinar on evidence, search and seizure, and due process. Chair Paquette encouraged members to check out the virtual offerings NIST is providing. The Committee greatly supports the ongoing efforts of NIST OWM in modifying its training opportunities to include more virtual options, particularly during the COVID-19 pandemic; this training has met the need of many jurisdictions who have relied on this during the restrictions brought on by the pandemic. The Committee encourages jurisdictions and industry to consider the use of web-based platforms to extend their own training opportunities through group sessions and training, as well as take advantage of videos and other training resources available online.

At the 2020 CWMA Interim Meeting, Mrs. Butcher provided a presentation on NIST OWM training activities during the period of January to July. She noted that this presentation was provided during the NCWM PDC’s virtual meeting in July 2020 and at the three prior regional weights and measures association meetings. Mrs. Butcher highlighted OWM’s efforts to support weights and measures jurisdictions by providing training and other professional development materials in a virtual format during the time that restrictions of the COVID-19 pandemic prevented field inspectors and service personnel from working in field installations. She noted the shift to include more virtual training options has a profound impact on OWM’s ability to reach more people than it can for in-person classes alone. Mrs. Butcher also noted OWM is taking the opportunity to consider how this virtual training might be incorporated into OWM’s regular training offerings and rather than just adding in virtual classes. OWM is considering how virtual offerings can be integrated into OWM’s overall training program even following the pandemic. In the future, OWM may offer multiple formats and consider hybrid approaches, such as presenting the lecture portions online and conducting hands-on portions in person with smaller classes held back-to-back. OWM is considering various approaches that might not only help its trainers to continue to provide training during the pandemic restrictions but that would also allow OWM to reach more people than is possible with in-person classes alone. OWM is mindful that a very important part of the in-person classes is the hands-on portion, so it is necessary to consider different options to ensure what is provided will still meet the needs of the jurisdictions and students. There may be various combinations of options that could be used.

Ms. Elizabeth Lambert (Missouri) noted in Missouri, Lab Manager, Mr. Kevin Upshulte, and several of their inspectors have taken the Evidence, Search, and Seizure online course, and they all said it was great, and they got a lot out of information out of the course. Mrs. Butcher noted she will share this feedback with the NIST OWM team responsible; Mr. Ken Butcher (NIST OWM, retired), who developed the webinar, and Mr. David Sefcik (NIST OWM), who has been presenting it. Mr. Doug Rathbun (Illinois) thanked Mrs. Butcher and all the people at NIST for their hard work. Illinois’ program has two metrology staff members in training who are anxious to get back to in-person training, and they all appreciate how NIST has stepped up in this and other arenas to present online training. Mr. Ivan Hankins (Iowa) concurred and shared he also participated in the “Search and Seizure” webinar and found it jam packed with information. Mr. Hankins would like to take the seminar again to catch anything he may have missed while taking notes. He noted Mr. Sefcik is a wonderful instructor, and NIST has done a great job with this. Mr. Hankins asked if there might be a possibility of having “private tutoring” once you are able to travel. For example, Mr. Sefcik might travel to Iowa and work one-on-one with individuals or small groups to provide training. Mr. Hankins noted that it is difficult to have full dialog and get all questions answered during the short space of a webinar, particularly if the primary mechanism for asking questions is to type questions into a chat box.

Mrs. Butcher reported that, at present, NIST OWM is restricted from traveling; however, once travel is once again permitted, NIST OWM will consider various options for delivering training based upon any pandemic-related restrictions that remain in place. One of these scenarios might include something like Mr. Hankins suggested or even modified classes in which a much smaller group of students participate in a classroom setting coupled with some online training in advance. This will depend on the conditions and restrictions. Mrs. Butcher also reported that a small group of OWM staff have been developing a strategy for OWM’s online training, not just during the pandemic restrictions but afterward since this mechanism provides an opportunity to reach far more customers than in-person alone. She acknowledged Mr. Hankins’ point about the challenges of discussions during a webinar and noted OWM

has been considering offering some “Information Hour” sessions (patterned after those used in the Laboratory Metrology Program) during which a particular technical topic would be discussed in a more informal format, allowing participants to ask questions and discuss technical issues. Mrs. Butcher also shared that another option OWM has used in the past prior to pandemic restrictions is that of conducting a webinar to a group of people located in the same (or several) rooms. A laptop and projector are set up and logged into a webinar to be presented by OWM and a microphone is used to provide sound to the group of people in the room. The webinar is conducted, and participants can ask questions and talk amongst themselves much like a normal, in-person classroom.

Mr. John Albert (Missouri) made a similar comment via the Zoom meeting chat, sharing they have required all their inspectors to take this training. Mr. Hankins noted Iowa has done the same. Mr. Fantozzi (Erie County, Ohio) commented that following the death of Ms. Fran Elson-Houston, (Ohio, director, deceased), there have been some challenges getting training events up and running again, and they very much appreciate the training NIST has been able to provide.

EDU-3 I Instructor Improvement

NOTE: The 105th Annual Meeting was a virtual event due to the COVID-19 pandemic. To streamline the event, Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

NIST OWM has provided legal metrology training for weights and measures jurisdictions and industry for many years but does not have the resources to respond to the numerous training requests it receives. OWM has long recognized that there are many individuals with extensive legal metrology experience who have the skills needed to provide this type of training. OWM hopes to draw from this pool to develop trainers who can present schools with NIST, thus leveraging NIST resources; providing more timely classes; and providing a way to more broadly share the valuable expertise these individuals possess. In the past ten years, NIST OWM has taken on more field inspection classes than it would otherwise be able to do because of the co-instructors drawn from its current pool of trainers.

Over the past ten years, OWM renewed its efforts to develop trainers, including the following.

- NIST held multiple trainer workshops and webinars designed to assist individuals in the community with technical expertise to enhance and strengthen their abilities as “trainers.”
- NIST identified tools and resources to assist trainers in their individual professional development and in conducting their own self-assessments of their knowledge, skills, and abilities as trainers.
- NIST provided multiple grants for a combined total of \$212,000 to the NCWM intended to pay travel costs of individuals to travel within their regions to conduct training and to participate in NIST training for trainers. This partnership has enabled NIST to bring in candidates for NIST-sponsored training such as “train the trainer” classes and to participate in NIST technical training schools.
- NIST has made a concerted effort to involve external co-instructors in numerous NIST training events and continues to use these co-instructors to the extent possible. Through an application process, in collaboration with weights and measures directors and nominated training candidates, NIST has identified a group of people who are now working with NIST to develop the knowledge, skills, and abilities to work with NIST staff in presenting technical training schools. A number of candidates in the NIST Trainer Program have already served as co-instructors for NIST technical training schools and have done an excellent job. OWM sincerely appreciates the willingness of those trainers and their directors who have supported their participation to devote time to making these seminars successful.

A list of all people who have attended a NIST “Train the Trainer” class or associated events has been posted on the NCWM website. Many people on this list have attended NIST “train the trainer” events and workshops but have not served as co-instructors for NIST classes and, in some cases, have not attended NIST technical training schools in the topic areas in which they have declared an interest in serving as trainers and for which they are listed on the website. Conversely, there are people on this list who have attended the workshops and NIST technical training seminars and

have also served as co-instructors in NIST training seminars. Thus, there is a variation in the experience levels of individuals on this list, particularly with presenting NIST seminars.

OWM has not authorized anyone (external to NIST) to independently present “NIST” classes. NIST training seminars on field inspection topics are only held a limited number of times each year. This poses a challenge in sustaining regular interaction and involvement of NIST trainer candidates. Nor does NIST have the resources to develop and sustain the development of all the individuals that have been invited to participate in the NIST trainer program activities and events held in the past. However, even if a candidate has not worked directly with NIST staff in presenting NIST seminars and is not designated to participate as an instructor in a NIST seminar, they and their jurisdictions can benefit from the experience and the candidate can still provide valuable training in their jurisdiction and region. Additionally, NIST OWM is authorized by IACET to issue “Continuing Education Units” for certain training seminars and, as part of this authorization, there are certain provisions that an instructor must follow to meet these requirements.

NIST values the expertise that the co-instructors bring to the NIST training events and plans to continue inviting co-instructors to NIST training events. Although the funds provided in past grants to the NCWM have been exhausted, NIST currently plans to pay for the travel expenses of any co-instructor invited to work with NIST on a NIST seminar and hopes these individuals and jurisdictions will continue to assist NIST in this capacity.

OWM appreciates the strong support of the NCWM, the PDC, and the volunteer trainers and their administrators in continuing to develop the NIST Trainer Program. OWM will continue to provide the Committee with updates on its progress as well as continue to collaborate with and support the Committee in its work.

The Committee has reiterated multiple times in the past that the responsibility for the training employee rests with individual organizations (weights and measures jurisdictions and industry alike). While NIST and other training providers offer excellent sources of training and training materials, organizations must develop and manage their own training programs, including developing trainers; establishing individual development plans for employees; and identifying strategies for continually assessing and responding to training needs. The Committee recognizes that NIST OWM cannot possibly train all weights and measures inspectors in the country. The state and municipal jurisdictions have ultimate responsibility for training and qualifying their personnel. To fulfill this responsibility, jurisdictions should be making individual plans to maintain or bolster their training efforts. NIST OWM should be viewed as one vital resource to support that effort. The Professional Development Committee is another resource. The Committee has created and posted on its website, the “Body of Knowledge” to establish uniform learning objectives for weights and measures professionals. In addition, the Committee has posted a Model Field Training Program document on its website. This program outlines methods to evaluate and document training and offers guidance on training new inspectors and taking steps to ensure their ongoing development.

See the Committee’s past reports for background information on this item along with other details on available tools for trainer development and NIST OWM’s efforts and partnership with the NCWM to continue this work.

At the 2018 NCWM Interim Meeting, no comments were heard on this item. Since NIST was not in attendance at the 2019 NCWM Interim Meeting, no updates were available; however, updated information was later provided and included in the Committee’s Interim Report.

At the 2019 NCWM Annual Meeting, Ms. Julie Quinn (Minnesota, retired) suggested that NIST OWM consider allowing qualified individuals to take advanced NIST classes if proven capable by means other than passing a basic NIST exam. Ms. Miller suggested that for example passing an NCWM professional certification in package checking could be a suitable alternate prerequisite for NIST advanced package checking training. NIST OWM indicated that they will discuss the possibility of alternate prerequisites. Note: Following the 2019 Annual Meeting, NIST decided to restructure its class offerings in this area in such a way that the prerequisite is no longer required.

Ms. Michelle Wilson (Arizona) stressed the importance of allowing/providing external trainers and requested that those trained by NIST via the train-the-trainer program be certified as qualified trainers.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Professional Development Committee rather than the NCWM Professional Development Committee.)

At the 2019 WWMA Annual Meeting, the WWMA Professional Development Committee heard no comments during the open hearings. The WWMA PDC continues to support the ongoing efforts of the NIST/OWM Train the Trainer Program.

At the 2019 SWMA Annual Meeting, the SWMA Professional Development Committee is recommending this item as an Information Item on the NCWM agenda.

At the 2019 NEWMA Interim Meeting, no comments were heard.

At the 2019 CWMA Interim Meeting, the Committee heard no comments and the CWMA supports the continued efforts in improving instructor training.

At the 2020 NCWM Interim Meeting, the Committee heard several joint comments involving Items EDU-2 and EDU-3. See EDU-2 for details.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Professional Development Committee rather than the NCWM Professional Development Committee.)

At the 2020 WWMA Annual Meeting, Mrs. Butcher noted OWM has been using external trainers as co-instructors with great success for some time; however, with the pandemic restrictions has postponed its in-person classes until conditions allow this again. Ms. Kathy de Contreras (California) encourages use of Train the Trainer and to provide more training sessions to expand the talent pool and to use a hybrid model (webinar and in-person/hands-on training). Ms. de Contreras pointed out that she and other trainers are nearing retirement. Ms. de Contreras urged NIST to consider opening a new class of train-the-trainers so that a smooth transition is possible. The use of these local trained staff may allow hands-on training to continue during times when travel by NIST staff is restricted.

Ms. Michelle Wilson (Arizona) suggested NIST OWM might consider expanding its concept of instructor training approach to engage those people who presently serve as co-instructors to provide instruction for the hands-on portions of the training. She noted that some instructors have strengths in the area of classroom training, and others may have stronger skills in demonstrating and presenting instruction on field demonstration. She noted that some field inspectors have lots of expertise in field inspection procedures, but not as much skill or knowledge of classroom training of adults. Perhaps if NIST were to provide the classroom portions in an online format and couple that with the use of these field trainers to provide the hands-on portion, this would play to the field trainers’ strengths. Mrs. Butcher noted these are options that OWM has discussed and is open to and welcomes ideas. OWM recently collected a team of OWM instructors to begin planning how to best move forward with virtual training approaches, particularly considering the pandemic.

At the 2020 SWMA Annual Meeting, Mrs. Butcher noted that, given the restrictions of the pandemic, NIST OWM has postponed its previously scheduled in-person training classes. Thus, there are no new developments in the area of NIST’s instructor training program. Mrs. Butcher noted OWM remains committed to continuing to work with its corps of external trainers and very much appreciates the generosity of both the trainers who share their time and expertise as co-instructors and to the administrators who allow these trainers to devote time to this work. These trainers bring a wealth of knowledge and expertise to the classes and greatly enhance the courses. OWM also looks forward to exploring ways in which these trainers can play a role in virtual course offerings as well. Mr. Phillip Wright (Texas) commented on the benefits of the Train the Trainer program participation and that it also enhanced state training programs by the trainer participating on the state level as well as bringing back additional knowledge to share.

At the 2020 NEWMA Interim Meeting, the Committee received no comments on this item. The Committee would like to thank NIST OWM for the continuing work with its train the trainer program and the contributions of those trainers who continue to work in cooperation with NIST to extend our collective training resources.

At the 2020 CWMA Interim Meeting, Mrs. Butcher reported that no work has been done in the area of instructor improvement since the onset of the COVID-19 pandemic. Mrs. Butcher expressed appreciation for the work done by those trainers in the program and noted that OWM looks forward to continuing to work with these trainers who have generously shared their expertise during NIST training events. OWM will also consider how these trainers might collaborate with NIST in delivering virtual training while pandemic restrictions prevent in-person training events.

The Committee received no comments on this item. The Committee would like to thank NIST OWM for the continuing work with its train the trainer program and the contributions of those trainers who continue to work in cooperation with NIST to extend our collective training resources.

The 2021 Interim Meeting was held virtually and immediately following the conclusion of the NCWM 2020 virtual meeting. Mrs. Butcher indicated that, due to continued restrictions brought about by the COVID-19 pandemic there have been no changes in the status of NIST OWM's work in this area from what was reported during the Committee's July 2020 Virtual Technical Sessions. The Committee received no comments during the open hearing on this item.

The 2021 Annual Meeting was held in an in person and online hybrid meeting session. The Committee received no comments during the open hearing on this item.

EDU-4 I Recommended Topics for Conference Training

NOTE: The 105th Annual Meeting was a virtual event due to the COVID-19 pandemic. To streamline the event, Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

The Board of Directors has charged the Committee with recommending appropriate topics for the technical sessions at future annual meetings. The Board of Directors asks the PDC to review and prioritize possible presentation topics and to submit those to the NCWM Chairman. The Chairman will coordinate with NCWM staff to secure presenters.

The following is a list of technical presentations made at the NCWM since 2009. Presentations given since 2010 are available at www.ncwm.com/annual-archive.

- Planning and Coordinating a National Market Place Survey (Ms. Rachelle Miller, Wisconsin 2017)
- The Life Cycle of Petroleum from Well to Retail (Mr. Prentiss Searles, API 2017)
- The United States Mint at Denver – Gold, Coins and Embezzlement (Mr. Thomas Fesing, 2016)
- Understanding Transportation Network Systems (Ms. Andrea Ambrose Lobato, Lyft and Mr. Bob O' Leary, Uber 2016)
- Regulatory Consideration for Legalized Marijuana (Ms. Julie Quinn, Minnesota, and Mr. Nick Brechun, Colorado 2016)
- Motor Oil Quality Violations (Mr. Tom Glenn, Petroleum Quality Institute of America, 2014)
- Making Sense of Electronic Receipts (Mr. Justin Hotard, Vice President and General Manager, NCR Corporation, 2014)
- LNG & CNG Motor Fuel – A Technical Briefing from Industry (Mr. Doug Horne, President CVEF, Mr. Zack Wester, Blu, Mr. Jeff Clarke, NGVA, 2014)
- Taximeter Technology Advancements (Mr. Matt Daus, International Association of Transportation Regulators, 2013)

- Advanced Vehicles and Fuel Quality (Mr. John M Cabaniss, Jr., Association of Global Automakers, 2013)
- Economic Justification and Demonstrating Value of Weights and Measures (Mr. Tim Chesser, Arkansas Bureau of Standards, 2012)
- Conducting Effective Marketplace Surveys and Investigations (Ms. Judy Cardin, Wisconsin Weights and Measures, 2012)
- Public Relations and Customer Service as Regulators (Mr. Doug Deiman, Alaska Division of Measurement Standards/ CVE, 2012)
- An Overview of Unit Pricing in the United States (Mr. David Sefcik, NIST OWM, 2011)
- Grocery Unit Pricing in Australia (Mr. Ian Jarratt, Queensland Consumers Association, 2011)
- Grocery Unit Pricing in Canada (Mr. Ian Jarratt, Queensland Consumers Association, 2011)
- The U.S. Hydrogen Measuring System: The Turning Point? (Ms. Kristin Macey, California Division of Measurement Standards, 2011)
- Corrosion in Ultra Low Sulfur Diesel Underground Storage Systems (Mr. Prentiss Searles and Ms. Lorri Gainawi, American Petroleum Institute, 2010)
- Risk-Based Inspection Schemes (Mr. Henry Oppermann, Weights and Measures Consulting, LLC, 2010)
- Diesel Exhaust Fluid (DEF) (Mr. Gordon Johnson, Gilbarco, Inc., and Mr. Randy Moses, Wayne, 2009)
- Fuel Volatility and Ethanol Blending (Mr. Jim McGetrick, BP Products, 2009)
- Investigative Techniques (Mr. Michael Cleary, Retired, 2009)

At the NCWM Interim Meeting 2019, the following suggestions from the floor for additional topics were received:

- Investigative reporting
- D.E.F. Testing requirements, special considerations (handling, safety, equipment)
- Differentiation between weight classifier and normal rounding scales
- Organizing/publishing existing training materials

NCWM 2019 Annual Meeting:

- Mr. Chesser suggested that a review of the NTEP organization, processes and certificate system would be a beneficial topic for training in the future.
- Mr. Steve Harrington (Oregon) offered diving into innovations / new areas in metrology (perhaps an industry presentation on a new technology). Mr. Harrington also suggested that we explore advances in modern distributed weighing/measuring systems, e.g., future point-of-sale systems.
- Mr. Albuquerque suggested the topic of emerging fuels, e.g., EV refueling, hydrogen. Mr. Ramsburg added LNG/CNG as a possibility. Mr. Ramsburg also added the possible topic of the new SI unit definitions and possible impact on W&M organizations.

- Mr. Gurney indicated that a possible topic could be a ‘case study’ of a successfully implemented W&M program (state, county or city) as an example.

The NCWM 2021 Interim Meeting was held virtually and immediately following the conclusion of the NCWM 2020 virtual meeting.

Mrs. Tina Butcher (NIST OWM) offered to develop a technical presentation related to the work their office is doing with master meters. Ms. Cheryl Ayer (New Hampshire) and Ms. Rachelle Miller (Wisconsin) expressed interest. Mr. Charles Stutesman (Kansas) suggested NIST training on the gravimetric proving process and suggested training on the use of error weights would be valuable.

The 2021 Annual Meeting was held in an in person and online hybrid meeting session.

PDC member, Mr. Ethan Bogren (Westchester County, New York) provided an update to recommended topics from previous NCWM and Regional Association meetings.

- Training on gravimetric testing of motor oils
- Training on mass flow meters/master meters
- Training on Class II scales for jewelry and cannabis
- Review of NTEP Organization, Processes, and Certificate system
- Training on method of sale and gravimetric testing for LPG/Propane bottle filling
- Training on testing of EV charging stations

The Committee received no comments during the open hearing on this item.

Regional Association Reporting:

(References to “Committee” in this section titled “Regional Association Reporting” without further qualification typically refers to the Regional Weights and Measures Association’s Professional Development Committee rather than the NCWM Professional Development Committee.)

At the 2019 WWMA Annual Meeting, the WWMA Professional Development Committee heard no comments during the open hearings. The WWMA PDC continues to support the ongoing efforts of the NCWM.

At the 2019 SWMA Annual Meeting no comments were received.

At the 2019 NEWMA Interim Meeting, Mr. Cassidy suggested best practices for attracting or finding possible candidates for metrology laboratory positions. He suggested the possibility of using interns with the related educational background and inquired if other jurisdictions have any experience with this process. Support for conference field trips was given if the subject matter is related to W&M issues and of a technical nature. If difficult to find outings with related subject matter, then traditional technical presentations can be given.

At the 2019 CWMA Interim Meeting the Committee received no comments.

At the 2020 NCWM Interim Meeting, Ms. Elson-Houston suggested training on gravimetric testing of motor oils for either a conference technical training session or a regional training. Mr. Mark Lovisa (Louisiana) suggested training on mass flow meters/master meters.

At the 2020 WWMA 2020 Annual Meeting, no comments were received during open hearings regarding this item. The Committee encourages WWMA members to review the listed training topics and forward suggestions to National Professional Development Committee for future training needs.

At the 2020 SWMA Annual Meeting, Chairman Floyd asked SWMA members to continue to think about possible topics for training and encouraged them to provide their input to the NCWM PDC. The SWMA PDC received no comments for this item.

At the 2020 NEWMA Interim Meeting, the Committee received no comments on this item during its open hearings. However, PDC Chairman Paquette reviewed some of the suggested training offerings and asked for input from participants.

At the 2020 CWMA Interim Meeting, the Committee received no comments on this item during its open hearings. Acting PDC Chairman Lambert encouraged CWMA members to submit suggested topics for training to the NCWM PD Committee.

PMT – PROGRAM MANAGEMENT

PMT-1 I Safety Awareness

NOTE: The 105th Annual Meeting was a virtual event due to the COVID-19 pandemic. To streamline the event, Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

One of the goals of the PDC is to educate jurisdictions on safety issues and to provide resources to help them implement effective safety and health management programs. The Committee intends to use the safety page at www.ncwm.com/safety as a place for states to share information and resources to help them address each of the major steps in creating and maintaining an effective safety program.

In July 2017, the Board of Directors created the Safety Task Group to create a safety tool kit to help weights and measures organizations create or improve their own safety programs. The toolkit is complete and is posted on the NCWM website at www.ncwm.com/safety.

At the 2018 Annual Meeting, the NCWM BOD decided to make the task group a permanent Subcommittee associated with the PDC. The newly formed Safety Awareness Subcommittee (SAS) will assume responsibility for:

- Maintaining and updating the safety toolkit.
- Writing and deploying the NCWM annual safety survey, as well as reporting on the results each year.
- Finding resources and/or developing weights-and-measures-focused materials relating to the top hazards identified through the safety survey or through developing the toolkit.
- Building a safety culture and developing safety leadership within the NCWM through participation on SAS.

The SAS is currently working to improve the annual safety survey by:

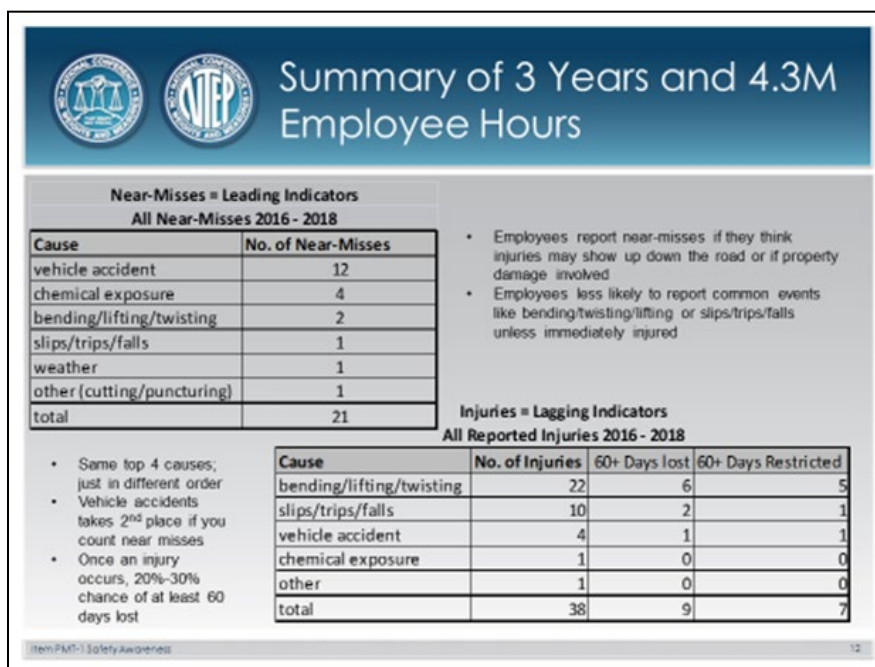
- Including questions about near-miss incidents and about incidents resulting in lost or restricted time over multiple years.
- Contacting counties and associate members to increase participation.
- Writing an instruction guide to help participants gather information they need before completing the survey.

The results of the 2018 survey were consistent with 2016 and 2017 results. Seven injuries were reported which resulted in days-away or lost time. All incidents occurred in the field. Five of them were related to

lifting/bending/twisting. The other two were related to slips/trips and falls. Six of the resulting injuries were soft tissue injuries (sprains, strains, torn joint ligaments, etc.) The remaining injury was a back/neck injury.

Although the survey does not currently ask about near-miss incidents, several jurisdictions have shared information about near-miss incidents which resulted in no days-away or lost time. When the results of all three annual surveys are compiled, the top four causes of near misses are the same as the top four causes of DART incidents.

The following information was provided at the 2019 NCWM Interim Meeting:



The SAS will focus some of their efforts next year in developing weights and measures materials related to:

- Bending/Lifting/Twisting
- Vehicle Accidents
- Slips/Trips/Falls
- Chemical Exposure

NCWM members are encouraged to review the complete presentation on the 2018 Safety Survey on the NCWM safety page.

The Committee expresses appreciation to the members of the Safety Subcommittee for their willingness to volunteer for this important work.

2020 Safety Subcommittee		
Office	Name	Affiliation
Committee Chair	Vacant	
Public Sector Member	Jason Flint	New Jersey
Public Sector Member	Elizabeth Koncki	Maryland
Public Sector Member	Brenda Sharkey	South Dakota
Public Sector Member	Mike Sikula	New York
Private Sector Member	Sprague Ackley	Digimarc
Private Sector Member	Tisha Arriaga	Marathon Petroleum, LLC
Private Sector Member	Bill Callaway	Crompco
Private Sector Member	Remy Cano	Northwest Tank and Environmental Services, Inc.
Private Sector Member	Robert LaGasse	Mulch and Soil Council

Currently the NCWM safety page houses the list of regional safety liaisons and an archive of past safety articles.

The Committee expresses appreciation to the members of the Safety Subcommittee for their willingness to volunteer for this important work.

The 2021 Committee members of the Safety Subcommittee were:

2021 Safety Subcommittee		
Office	Name	Affiliation
Committee Chair	Vacant	
Public Sector Member	Jason Flint	New Jersey
Public Sector Member	Elizabeth Koncki	Maryland
Public Sector Member	Vacant	CWMA Representative
Public Sector Member	Mike Sikula	New York
Private Sector Member	Tisha Arriaga	Marathon Petroleum, LLC
Private Sector Member	Bill Callaway	Crompco
Private Sector Member	Remy Cano	Northwest Tank and Environmental Services
Private Sector Member	Robert LaGasse	Mulch and Soil Council
Private Sector Member	John Lawn	Rinstrum, Inc.

2020 Regional Safety Liaisons:

Central Weights and Measures Association (CWMA)

Ms. Brenda Sharkey, South Dakota Weights and Measures

Northeastern Weights and Measures Association (NEWMA)

Mr. Michael Sikula, New York Bureau of Weights and Measures

Southern Weights and Measures Association (SWMA)

Ms. Elizabeth Koncki, Maryland Department of Agriculture

Western Weights and Measures Association (WWMA)
Mr. Remy Cano, Northwest Tank & Environmental Services

2021 Regional Safety Liaisons:

Central Weights and Measures Association (CWMA)
Vacant

Northeastern Weights and Measures Association (NEWMA)
Mr. Michael Sikula, New York Bureau of Weights and Measures

Southern Weights and Measures Association (SWMA)
Ms. Elizabeth Koncki, Maryland Department of Agriculture

Western Weights and Measures Association (WWMA)
Mr. Remy Cano, Northwest Tank & Environmental Services

Each region is responsible for providing a safety article for the NCWM newsletter according to the following schedule:

2020 Safety Article Schedule		
Issue 1 (February 2020)	NEWMA	January 15, 2020
Issue 2 (May 2020)	SWMA	April 15, 2020
Issue 3 (September 2020)	WWMA	August 15, 2020
Issue 1 (February 2021)	CWMA	January 15, 2021

2021 Safety Article Schedule		
Issue 1 (February 2021)	NEWMA	January 15, 2021
Issue 2 (May 2021)	SWMA	April 15, 2021
Issue 3 (September 2021)	WWMA	August 13, 2021
Issue 1 (February 2022)	CWMA	January 15, 2022

Thanks to the following individuals for their contributions since the 2019 Annual Meeting:

- *Don't Get Zapped* – Mr. Brett Gurney (Utah)
- *Check it out! The Happy-list State* – Ms. Elizabeth Koncki (Maryland)
- *Safe Path to Lifting* – Ms. Brenda Sharkey (South Dakota)

At the 2019 NCWM Annual Meeting, Mr. Steve Harrington (Oregon) suggested that we could publish 'best ergonomic practices' in daily W&M routines as these tasks undergo hazard analysis, and communicate these recommendations to avoid repetitive motion injury, etc. during daily tasks as they are developed.

The Committee would like to thank the following individuals for their contributions since the 2020 Annual Meeting:

- *The Psychology of Safety* – Mr. Ron Armstrong (NWTES)

- *Back to Your Health* – Ms. Elizabeth Koncki (Maryland)
- *Engineering Controls* – Mr. Mike Sikula (New York)
- *Avoid Hostile Encounters in the Field* – Mr. Mike Sikula (New York)
- *Who's Got Your Back?* – Mr. Ron Armstrong (NWTES)

At the 2021 NCWM Interim Meeting, the 2021 Interim Meeting was held virtually and immediately following the conclusion of the NCWM 2020 virtual meeting.

PDC Chair David Aguayo reviewed this item in the absence of the SAS Chair, Ms. Lori Jacobson (South Dakota). The Committee expressed appreciation to all the regional safety representatives for their continued contributions. The CWMA Regional Safety Liaison position is currently vacant. Individuals interested in serving in this capacity should contact the CWMA Chair or Board member.

The Committee expresses its appreciation to Ms. Brenda Sharkey (South Dakota) who was the previous CWMA representative for her work.

No comments were heard during the open hearing.

The 2021 NCWM Annual Meeting was held in an in-person and online hybrid meeting session.

Chair Aguayo reviewed this item due to the current vacancy of the SAS Chair. The Committee appreciates the ongoing efforts of the regional safety liaisons for their continued contributions to safety articles. The CWMA Regional Safety Liaison position remains vacant.

The Committee received no comments during the open hearing on this item.

Regional Association Reporting:

(References to "Committee" in this section titled "Regional Association Reporting" without further qualification typically refers to the Regional Weights and Measures Association's Professional Development Committee rather than the NCWM Professional Development Committee.)

At the 2019 WWMA Annual Meeting, the Professional Development Committee heard no comments during the open hearings. The WWMA PDC continues to support the efforts of the Safety Awareness Subcommittee and values the information posted on the safety page on the NCWM website.

At the 2019 SWMA Annual Meeting, the Committee received no comments.

At the 2019 NEWMA Interim Meeting there were no comments. Ms. Julie Quinn (Minnesota) has retired from her position as the safety liaison. The Committee thanks her for her many years of dedicated service to the Professional Development Committee and for bringing safety awareness to the W&M community.

At the 2019 CWMA Interim Meeting, the Committee received no comments.

At the 2020 NCWM Interim Meeting, the Committee received no comments.

At the WWMA 2020 Annual Meeting, WWMA PDC Chair Wilson announced that PDC member Mr. Remy Cano (Northwest Tank & Environmental Services) has graciously agreed to serve as the WWMA Regional Safety Liaison to the NCWM Professional Development Committee. Each region is responsible for providing a safety article for the NCWM newsletter. Mr. Cano recently prepared and submitted an article to the NCWM on behalf of the WWMA.

At the 2020 SWMA Annual Meeting, the SWMA PDC wants to acknowledge SWMA's Safety Liaison to the NCWM, Ms. Elizabeth Koncki (Maryland), for her continued work in this capacity and thanks her for her contributions of safety-related articles to the NCWM Newsletter on behalf of the SWMA. The SWMA PDC received no comments for this item.

At the 2020 NEWMA Interim Meeting, PDC Chairman Mr. Marc Paquette reviewed this item and expressed appreciation to Mr. Mike Sikula (New York) for his work as NEWMA's Regional Safety Liaison to the NCWM and the articles Mr. Sikula has contributed on NEWMA's behalf. Chairman Paquette also reported that Ms. Lori Jacobson (formerly of South Dakota) has agreed to serve in the capacity as Safety Liaison. Chairman Paquette also shared that the NCWM has decided to establish an additional educational task group on the topic of "Skimmers" as part of the NCWM PDC structure, similar to that used for the topic of "Safety Awareness." This would allow the structure of the PDC to be used to encourage and maintain education in these and other technical areas.

At the 2020 CWMA Interim Meeting, Acting PDC Chair, Ms. Elizabeth Lambert recognized Ms. Brenda Sharkey (South Dakota) for her work as the CWMA's Safety Liaison to the NCWM. Ms. Lambert thanked Ms. Sharkey and recognized a recent safety-related article Ms. Sharkey contributed on CWMA's behalf to the NCWM newsletter. Ms. Lambert also expressed thanks to Ms. Lori Jacobson (formerly of South Dakota) who has agreed to serve in the capacity as Safety Liaison to the NCWM PDC Committee.

PMT-2 I Skimmer Education Task Group

This is a new agenda item added to the report by the PDC after the Pub 15 printing deadline.

The Skimmer Education Task Group (SETG) held its first meeting during the 2021 Annual Meeting. The SETG is made up of industry members, regulatory officials, and interested parties for the purpose of continuing work identified by the S&T Committee's Credit Card Skimmer Task Group. Under the guidance of the Professional Development Committee (PDC), the task group will develop education and outreach strategies and gather or produce materials to educate regulatory officials, fuel retailers, industry members and consumers on payment card information theft via skimming devices. The SETG will provide information and organize education sessions to share recommendations for safety procedures and technologies to better protect consumer payment information and reduce the risk of skimmer installation at fuel dispensers. The SETG will continue in force until the task group Chair and the PDC Chair agree the work has been completed. The task group may also be disbanded by vote of the NCWM Board of Directors. The task group will meet via electronic media, teleconferences, face-to-face meetings, or other means available.

Co-Chair, Ms. Paige Anderson (NACS) provided a report of their meeting held on January 10, 2021, during the open hearing. Following is a summary of her remarks.

The SETG expressed their appreciation for the leadership and assistance of Mr. Hal Prince (Florida), the NCWM board and staff, Mr. David Aguayo (San Luis Obispo County, California) and the PDC in helping to create the task group. Many of the task group members worked on the policy item before the S&T Committee to establish user requirements on fuel dispensers to prevent skimming, and during that time recognized the importance of education and training.

The SETG's mission to educate the membership and bring together all stakeholders in sharing information on skimming. The SETG recognizes that technology changes, include the devices used to steal debit and credit card information, the technology to prevent these thefts, and the criminals become more organized and sophisticated. NCWM provides a powerful platform to bring together all stakeholders – state officials, law enforcement, manufacturers, service companies, retailers, security providers and consumers.

In organizing the task group, it was decided that having co-chairs representing both regulatory officials and the private sector demonstrates partnership in combatting skimming and the criminal organizations.

The SETG held their first meeting on Sunday, January 10, 2021, via web conference. The number of attendees who attended the meeting was remarkable. It clearly demonstrated that there is a significant need for knowledge on this issue. The task group discussed and finalized their 2021 goals. The two goals are to:

1. Establish a library of resources for the public on the NCWM website. The resources will consist of videos, articles, reports, checklists, contact information, best practices, and other information. The task group recognized that there may be some sensitive or proprietary data that should not be put on the public-facing website but may be shared with the membership or a targeted group of the membership. Alternative distribution methods would be determined and used in these cases. Communicating the availability and location of these resources to the membership and beyond is an important element of the strategy and project.
2. Host presentations and briefings from subject matter experts at future NCWM meetings. The task group is planning to provide such a briefing at the Annual meeting in July 2021. The Committee is looking at 3 key constituencies to provide presentations:
 - Law enforcement – overview of the landscape of activity on skimming (e.g., U.S. Secret Service)
 - Private sector security experts - to share what they are seeing and describe the types of technology being used by the criminals and methods used to combat skimming
 - Retail/industry - updates on the transition to EMV card readers, etc.

The task group is also working to identify other key stakeholders to either present or to join the task group. These key stakeholders included financial institutions such as banks, credit card providers, and credit unions.

The task group welcomes volunteers and encourages participation from all members. If you or your staff are interested, contact Ms. Anderson, Mr. John McGuire (New Jersey), members of the PDC, or the NCWM staff.

Current SETG members are:

SETG Members		
Office	Name	Affiliation
Co-Chair	Paige Anderson	NAS
Co-Chair	John McGuire	New Jersey
Public Sector	Bobby Fletcher	Louisiana
Public Sector	John Larkin	California
Public Sector	Mike Harrington	Iowa
Public Sector	Vince Wolpert	Arizona
Public Sector	Scott Borse	PEI
Public Sector	Owen Dewitt	FlintLoc Technologies, LLC
Public Sector	Brent Price	Gilbarco, Inc.
Public Sector	Mike Roach	Invenco Payment Systems
Public Sector	Scott Schober	Berkley Varitronics Systems

At the 2021 NCWM Interim Meeting, the 2021 Interim Meeting was held virtually and immediately following the conclusion of the NCWM 2020 virtual meeting.

Ms. Kristin Macey (California) indicated it has been invaluable to share lessons learned and techniques on detecting skimmers. Sharing experiences with law enforcement agencies, including local and state law enforcement, FBI, and Secret Service is helpful. She recommends the task group continue these conversations.

Ms. Cheryl Ayer (New Hampshire) shared that they worked with the Secret Service in November 2020 to inspect dispensers in several cities. She stated that New Hampshire fully supports the Skimmer Education Task Group.

At the 2021 NCWM Annual Meeting, the 2021 Annual Meeting was held in an in-person and online hybrid meeting session.

Co-Chair of SETG, Mr. John McGuire (New Jersey) provided an update to the Committee during open hearings. Mr. McGuire provided information on SETG's recent meeting and their future efforts. On July 18, 2021, SETG met in Rochester, New York, during the NCWM 106th Annual meeting. The following is a summary of his remarks.

SETG met on two separate occasions searching for a pathway to bring forward education and outreach opportunities on skimmer issues from the weights and measures and law enforcement communities. With the new User Requirement, U.R. 4.2 Security for Retail Motor-Fuel Devices (RMFD), the task group is seeking to create a section under the resource tab on NCWM's website. This would serve as a central repository dedicated to the dissemination of information for skimmer education and outreach. This would provide a means to make available resources such as educational videos, a nationwide alert system, useful forms and documents, and related trainings.

Videos can be linked to online sources such as YouTube and other sites that share and provide information on skimmers related to RMFDs. Videos and other related content can be exchanged with associate members to educate and potentially provide innovative equipment used in the detection of skimmers.

A nationwide alert system to all state directors for immediate notification when a skimmer is detected. The SETG is working towards providing a link for immediate uploading of a detected skimmer to this system. State directors and other authorized users would have the ability to upload information on skimmers, including location of detection, make and model of the RMFD and related skimmer information such as type (e.g., inlay, chip, or thumb drive) and photographs for visual content and clarity. The alert system would be valuable to all jurisdictions in the education and deterrence of skimmers in RMFDs.

A checklist that would assist in gathering pertinent information to be documented when a skimmer is detected at a RMFD. The SETG is currently culminating information gathered by multiple jurisdictions to provide a comprehensive checklist. Once finalized, the task group will submit to the PDC for further action.

The SETG will be seeking material and presenters through industry partners, including law enforcement officials to provide presentations on skimmers during future NCWM meetings. The focus of these presentations will be to provide current updates, new methods of implementation, technology, and provide resources to membership.

The SETG will continue to move forward with these ideas to meet their scope and purpose. Updates on the development of these items will be given by the SETG to the PDC.

Mr. Marc Paquette, Vermont | Committee Chair
Mr. David Aguayo, San Luis Obispo County, California | Member
Ms. Brenda Sharkey, South Dakota | Member
Mr. Scott Ferguson, Michigan | Member
Mr. Paul Floyd, Louisiana | Member
Mr. James Pettinato, TechnipFMC | AMC Representative
Ms. Lori Jacobson | Safety Liaison
Mrs. Tina Butcher | NIST Liaison
Mr. Jerry Buendel | Certification Coordinator

2020 Professional Development Committee

Mr. David Aguayo, San Luis Obispo County, California | Committee Chair
Mr. Gary Milton, Virginia | Member
Mr. Scott Ferguson, Michigan | Member
Mr. Paul Floyd, Louisiana | Member
Mr. Ethan Bogren, Westchester County, New York | Member
Mr. James Pettinato, TechnipFMC | AMC Representative
Mrs. Tina Butcher, NIST, OWM | NIST Liaison
Mr. Jerry Buendel, Retired | Certification Coordinator
Vacant, Safety Liaison

2021 Professional Development Committee

Appendix A

NIST OWM Training Future Plans PDC Agenda Item EDU-2



EDU-2 Training – NIST OWM Training – Future Plans

- No current commitments to in-person training in 2021
 - All "in-person" field inspection classes postponed until further notice
- Training in FY 2022
 - Travel restrictions may lift later this summer
 - Continuing to reassess as situation unfolds
 - Local pandemic restrictions
 - Travel restrictions for training staff and students
 - Unclear how pandemic-related restrictions will affect OWM's future in-person training for all programs
 - Impact of social distancing requirements on classroom size and configuration and ability to present to groups
 - Lab Metrology Program closely watching NIST policies regarding hosting events on site
- Training Going Forward
 - Will continue to offer virtual training
 - Plan to expand available virtual training topics
 - Experimenting with available technology and tools to best incorporate elements of "hands on" in field inspection training



EDU-2 Training– NIST OWM Training –Future Plans (cont.)

- Virtual Training Space
 - Significant progress on outfitting a virtual training space at NIST for OWM's use in delivering virtual training
 - Small group within OWM has been working with other NIST staff to plan this effort
 - Space has been allocated and equipment purchases are in progress
 - Significant support from the Physical Measurement Laboratory (OWM's larger operating unit)
 - Looking forward to beginning work on this space!
- OWM trainers are participating in a variety of training courses as part of their professional development
 - Virtual training design and development and delivery
- Considering development of hybrid courses (for use during and after pandemic)
 - Virtual sessions coupled with hands on" sessions using virtual technology and/or local onsite trainers to help facilitate
- See OWM Calendar of Events for upcoming training:
<https://www.nist.gov/newevents/upcomingevents/org/6436>
 - Note: A series of three new webinars planned on the topic of LPG Cylinder Refilling
 - "LPG (Propane) - Verifying the Net Contents of 20lb Cylinders (Part 1)" already in progress with several sessions upcoming

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National Type Evaluation Program (NTEP) 2020 – 2021 Final Report

Mr. Stephen Benjamin, 2020 Committee Chair
North Carolina

Mr. Craig VanBuren, 2021 Committee Chair
Michigan

INTRODUCTION

This is the final report of the National Type Evaluation Program Committee (NTEP) (hereinafter referred to as the “Committee”) for the 105th and 106th Annual Meetings of the National Conference on Weights and Measures (NCWM).

NCWM convened the 105th Annual Meeting in July 2020, then adjourned to January 10, 2021, due to the lack of a quorum. On January 10-12, 2021, the NCWM reconvened the 105th Annual Meeting and held virtual voting on the 2020 Agenda Items. This was followed by the 2021 Interim Meeting conducted January 13-15, 2021.

Robert’s Rules of Order allow virtual voting, provided that NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the NCWM Bylaws at that time and Roberts Rules of Order, items approved by a virtual vote are effective upon ratification at the next in-person opportunity. The 106th NCWM Annual Meeting was held July 19-22, 2021. NCWM obtained a court order allowing for virtual voting at the 106th Annual Meeting to ratify the decisions of the 105th Annual Meeting, including a bylaw amendment allowing for official virtual voting for the agenda items of the 106th Annual Meeting.

This final report contains the proceedings from both the 2020 and 2021 Annual Meetings. The report is based on the 2021 Interim Meeting Agenda offered in NCWM Publication 15; the 2021 NCWM Publication 16, “Committee Reports;” testimony at public hearings; comments received from the regional weights and measures associations and other parties; addendum sheets issued at the 2020 and 2021 Annual Meetings; actions taken by the membership at the voting sessions of the two (105th and 106th) Annual Meetings; and ratifications by the NCWM at the 106th Annual Meeting.

Table A identifies the agenda items by reference key, title of item, page number and the appendices by appendix designations. The acronyms for organizations and technical terms used throughout the agenda are identified in Table B. The first three letters of an item’s reference key are assigned from the Subject Series List. The next 2 digits represent the year the item was introduced. The status of each item contained in the report is designated as one of the following: **(V) Voting Item:** the committee is making recommendations requiring a vote by the active members of NCWM; **(I) Informational Item:** the item is under consideration by the Committee but not proposed for Voting; **(A) Assigned Item:** the Committee has assigned development of the item to a recognized subcommittee or task group within NCWM. **(D) Developing Item:** the Committee determined the item has merit; however, the item was returned to the submitter or other designated party for further development before any action can be taken at the national level; **(W) Withdrawn Item:** the item has been removed from consideration by the Committee.

Table C provides a summary of the results of the voting on the Committee’s items and the report in its entirety. Some Voting Items are considered individually; others may be grouped in a consent calendar. Consent calendar items are Voting Items that the Committee has assembled as a single Voting Item during their deliberation after the Open Hearings on the assumption that the items are without opposition and will not require discussion. The Voting Items that have been grouped into consent calendar items will be listed on the addendum sheets. Prior to adoption of the consent calendar, the Committee entertains any requests from the floor to remove specific items from the consent calendar to be discussed and voted upon individually.

Committees may change the status designation of agenda items (Developing, Informational, Assigned, Voting and Withdrawn) up until the report is adopted, except those items which are marked Developing, Informational, Assigned

or Withdrawn cannot be changed to Voting Status. Any change from the Committee Interim Report (as contained in this publication) or from what appears on the addendum sheets will be explained to the attendees prior to a motion and will be acted upon by the active members of NCWM prior to calling for the vote.

Proposed revisions to the handbook(s) are shown as follows. 1) deleted language is indicated with a **bold face font using strikeouts** (e.g., ~~this report~~), and 2) proposed new language is indicated with an **underscore bold faced font** (e.g., **new items**). When used in this report the term “weight” means “mass.”

Note: The policy of NIST is to use metric units of measurement in all its publications; however, recommendations received by NCWM technical committees and regional weights and measures associations have been printed in this publication as submitted. Therefore, the report may contain references to U.S. customary units.

Subject Series List

International.....	INT Series
Activity Reports.....	ACT Series
Conformity Assessment Program	CAP Series
NCWM Publication 14, Administrative Policy	ADM Series
Other Items	OTH Series

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Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
CC	Certificate of Conformance	NCWM	National Conference on Weights and Measures
CIML	International Committee of Legal Metrology	NIST	National Institute of Standards and Technology
DoMC	Declaration of Mutual Confidence	NTEP	National Type Evaluation Program
IV	Initial Verification	OIML	International Organization of Legal Metrology
MAA	Mutual Acceptance Arrangement	OIML-CS	International Organization of Legal Metrology – Certificate System
MC	Measurement Canada	OWM	Office of Weights and Measures
MDMD	Multiple Dimension Measuring Devices	R	Recommendation
MRA	Mutual Recognition Arrangement	VCAP	Verification Conformity Assessment Program

Table C
Voting Results

Reference Key Number	House of State Representatives		House of Delegates		Results
	Yeas	Nays	Yeas	Nays	
Report	Voice Vote				Adopted
* The 105 th NCWM Annual Meeting convened in July 2020, then adjourned to January 10, 2021, due to the lack of a quorum. NCWM reconvened the 105 th Annual Meeting on that date and held virtual voting on the 2020 Agenda Items shown in the above table, “Table C, Summary of Voting Results 2020 Annual.” Robert’s Rules of Order allow virtual voting, provided that NCWM held the 105 th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. Under the NCWM Bylaws at that time and Roberts Rules of Order, items adopted by a virtual vote are effective upon ratification at the next in-person opportunity. NCWM obtained a court order allowing for virtual voting at the 106 th Annual Meeting in July 2021 to ratify the decisions of the 105 th Annual Meeting, including a bylaw amendment allowing for official virtual voting at the 106 th Annual Meeting. The 105 th Annual Meeting items were ratified in a consent calendar on the Board of Directors Agenda at the 106 th Annual Meeting					

Details of All Items

(In order by Reference Key)

INT – INTERNATIONAL

INT-1 I Mutual Recognition Arrangement (MRA)

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

The MRA between Measurement Canada (MC) and NTEP labs originated April 1, 1994. Since that time, the original MRA has expanded, and a second MRA covering measuring devices was developed. On Tuesday July 26, 2016, NCWM Chairman Jerry Buendel and Measurement Canada President Alan Johnston signed a renewal MRA that provides for continued cooperation between the two organizations and continuation of the beneficial partnership. The new MRA will be effective for 5 years.

The scope of the current MRA includes:

- gasoline and diesel dispensers;
- high-speed dispensers;
- gasoline and diesel meters intended to be used in fuel dispensers and truck refuelers;
- electronic computing and non-computing bench, counter, floor, and platform scales with a capacity up to 1000 kg (2000 lb);
- weighing/load receiving elements with a capacity of up to 1000 kg (2000 lb);
- electronic weight indicating elements (except those that are software based, i.e., programmed by downloading parameters); and
- mechanical scales up to 10 000 kg (20 000 lb).

MC, NTEP, and all our mutual stakeholders agree that the MRA is a benefit for the North American weights and measures industry. The NTEP Committee appreciates the efforts and cooperation of Measurement Canada and is working with MC to continue the cooperative arrangement.

During the 2020 Interim Meeting, no comments were heard on this item. It was noted that the current agreement expires on July 26, 2021.

At the 2021 NCWM Interim Meeting, Mr. Darrell Flocken (NTEP Administrator) reported that work will begin later this month on updating the current agreement to extend into 2026. The updated agreement will be prepared for signing at the 2021 NCWM Annual Meeting. There are no expected changes to the MRA.

INT-2 I OIML-Certification System (CS)

NOTE: The 105th Annual Meeting was a virtual event due to the COVID-19 pandemic. To streamline the event, Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

In January 2018 the International Organization of Legal Metrology (OIML) MAA was officially replaced with the OIML-Certification System (CS). Information regarding the OIML-CS can be found at www.oiml.org. NCWM

signed the OIML MAA Declaration of Mutual Confidence (DoMC) for Recommendation (R) 60 Load Cells as a Utilizing Participant in 2006 and NCWM signed the OIML-CS Utilizer Declaration for R 60 in January 2018. A Utilizer is a participant which does not issue any OIML Certificate of Conformance (CC) nor OIML Test Reports but does utilize the reports issued by OIML-CS Issuing Authorities and Authorized Testing Laboratories.

Dr. Charles Ehrlich (NIST OWM) serves on the Management Committee of the OIML-CS, and Mr. Flocken serves on the Review Committee. The US (NTEP) supported the OIML-CS process and has agreed to continue accepting OIML-CS R 60 test data for load cells with the provision that any use of manufacturer test data was clearly identified on the test report section of the certificate because NTEP cannot use manufacturer test data towards issuance of an NTEP certificate. The OIML-CS criteria aligns with the NTEP Committee's recommendations and the instructions provided by the NCWM Board of Directors.

Dr. Ehrlich requested, on multiple occasions, that NCWM review its policy regarding participation in the OIML MAA (and now the OIML-CS) for R 76 (Non-Automatic Weighing Instruments). The NCWM Board recapped the decision process to participate in the utilization of R 60 test data. Existing policy from 2006 is not to participate in R 76 until NCWM can do so as an Issuing Participant, now referred to under the OIML-CS as an Issuing Authority. In 2016 the Board revisited the 2006 discussions leading to that decision, including considerations for NTEP labs' workload, potential lost expertise, concerns with quality of evaluations at some foreign labs, etc. Since there were no new developments to affect its decision, the NCWM Board of Directors agreed to maintain existing policy. Dr. Ehrlich suggested that if there was no possibility in sight that the NCWM could become an Issuing Authority, then it should consider becoming a Utilizer for OIML R 76 under the OIML-CS. Some U.S. manufacturers support NCWM policy, but others would like to have one-stop shopping. Besides OIML R 60 and OIML R 76, the OIML-CS now also includes R 49 (Water meters), R 51 (Automatic catchweighers), R 117 (RMFD), R 46 (Active Electrical Energy Meters) and R 137 (Gas meters), under what is called "Scheme A", where either accreditation or peer review of both the Issuing Authority and its Test Labs is required. OIML R 61 (Automatic Gravimetric Filling Instruments), R 85 (Level gauges for stationary storage tanks), and OIML R 129 (Multi-dimensional measuring instruments) are presently in "Scheme B", which is the introductory level of the OIML-CS where "self-declaration" is used as the basis for demonstrating compliance with the OIML-CS but will transition to Scheme A in July 2020. From January 2011 to October 2019, ninety-four (October 2018 to November 2019) plus 5 (3 new and 2 amended) NTEP certificates for load cells were issued under the former MAA, now OIML Certification System. The NTEP Administrator or NTEP Specialist has reviewed all test data and drafted the NTEP certificates.

Dr. Ehrlich is representing the U.S. interests in this work and updated the Board at the NCWM Interim Meeting in January 2020.

During the 2020 Interim Meeting, no comments were heard on this item during the open hearings, however; during the Committee's work session on Wednesday morning, Dr. Ehrlich reported that additional device types have been added to the OIML-Certification System. The information above has been updated to reflect these changes.

At the 106th Annual Meeting, implementation of the (new) International Organization of Legal Metrology – Certification System (OIML-CS) officially began in January 2018, replacing the previous OIML MAA and basic certificate systems. NCWM signed the OIML MAA Declaration of Mutual Confidence (DoMC) for Recommendation (R) 60 "Load Cells" as a Utilizing Participant in 2006 and NCWM signed the OIML-CS Utilizer Declaration for R 60 in January 2018. A Utilizer is a participant in the system that does not issue any OIML Certificates of Conformance (CC) or OIML Test Reports but does utilize the reports issued by OIML-CS Issuing Authorities and Authorized Testing Laboratories.

Dr. Ehrlich serves on the Management Committee of the OIML-CS, and Mr. Flocken serves on the OIML-CS Review Committee. The US (NTEP) supports the OIML-CS process and has agreed to continue accepting OIML-CS R 60 test data for load cells with the provision that any use of manufacturer test data is clearly identified on the test report section of the certificate because NTEP cannot use manufacturer test data towards issuance of an NTEP certificate. The OIML-CS criteria aligns with the NTEP Committee's recommendations and the instructions provided by the NCWM Board of Directors.

Dr. Ehrlich has requested, on multiple occasions, that NCWM review its policy regarding participation in the OIML-CS (and previously participation in the OIML-MAA) for R76 (Non-Automatic Weighing Instruments). The NCWM

has continued to follow a policy that was established in 2006 to not participate in R76 until NCWM can do so as an Issuing Authority. In 2016, the Board revisited the 2006 discussions leading to that decision, including considerations for NTEP labs' workload, potential lost expertise, concerns with quality of evaluations at some foreign labs, etc. Since there were no new developments to affect its decision, the NCWM Board of Directors agreed to maintain existing policy. Dr. Ehrlich suggested that if there was no possibility in sight that the NCWM could become an Issuing Authority, then it should consider becoming a Utilizer for OIML R76 under the OIML-CS. Some U.S. manufacturers support current NCWM policy on this, but others would prefer a change.

The OIML-CS now includes 37 categories of measuring instruments under what is called "Scheme A", where accreditation or peer review is required of the Issuing Authority and its Test Labs. In addition to R 60 and R 76, some of the instruments and systems in the OIML-CS that are probably of the most interest to NCWM members include: OIML R 21 (Taximeters), R 46 (Active Electrical Energy Meters), R 49 (Water meters), R 51 (Automatic catch-weighers), R 59 (Moisture meters for cereal grains and oilseeds), R 61 (Automatic gravimetric filling instruments), R 85 (Level gauges for stationary storage tanks), R 106 (Automatic rail-weighbridges), R 117 (fuel dispensers and other liquid flow systems), OIML R 129 (Multi-dimensional measuring instruments), and R 137 (Gas meters).

Information regarding the OIML-CS can be found at www.oiml.org. Dr. Ehrlich represents the U.S. interests in this work and regularly provides updates to the NCWM Board of Directors on these activities.

ACT – ACTIVITY REPORTS

ACT-1 I NTEP Participating Laboratories and Evaluations Reports

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

The NTEP weighing and measuring laboratories held a joint meeting March 26-28 in Tulsa, Oklahoma.

The NTEP weighing laboratories also met in August 2019, prior to the NTEP Weighing Sector meeting in Denver, Colorado to discuss current issues.

NTEP continues to routinely survey customers pertaining to NTEP administration and laboratories customer service. The survey is released to active CC holders. The board routinely reviews the results of the survey to form a continuous improvement plan for NTEP. With any survey, the challenge is to develop a document that is concise enough that customers will respond, while also providing a meaningful set of data. To date, the NCWM Board of Directors is finding general approval of NTEP services.

During the 2019 Annual Meeting the Committee reviewed NTEP statistics through June 2019. The review of statistics shows that incoming applications are relatively comparable to normal and there exist no significant laboratory backlog issues. See Appendix A for NTEP statistics.

The 2020 meeting of the NTEP Participating Laboratories is scheduled for March 24-26, 2019 in Annapolis, Maryland.

During the 2020 Interim Meeting, no comments were heard on this item.

The NTEP Weighing Laboratories held a video conference meeting on July 23, 2020. The NTEP Measuring Laboratories held a video conference meeting on August 26, 2020.

NTEP continues to routinely survey customers pertaining to NTEP administration and laboratories customer service. The survey is released to active Certificate of Conformance (CC) holders. The NCWM Board of Directors routinely reviews the results of the survey to form a continuous improvement plan for NTEP. With any survey, the challenge

is to develop a document that is concise enough that customers will respond, while also providing a meaningful set of data. To date, the NCWM Board of Directors is finding general approval of NTEP services.

At the 2020 Annual Meeting, the Committee reviewed NTEP statistics through September 2020. The review of statistics shows that incoming applications are relatively comparable to normal and there exist no significant laboratory backlog issues. See Appendix A for NTEP statistics.

The NTEP Participating Laboratories Meeting was scheduled for March 2021 in Annapolis, Maryland.

At the NCWM 2021 Interim Meeting, Mr. Flocken reported that the 2021 NTEP Participating Laboratories Meeting would move to a virtual format.

ACT-2 I NTEP Sector Reports

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

All NTEP Sector Reports are available to members at the time *NCWM Publication 15* is published. The NTEP Committee is committed to ensuring electronic versions of sector reports are available with NCWM Publication 15. Please note the sector summary reports will only be available in the electronic version of NCWM Publication 15 and at www.ncwm.com/interim-archive; they will not be available in printed versions of NCWM Publication 15.

NTEP Belt-Conveyor Scale Sector:

The NTEP Belt-Conveyor Scale Sector met October 29, 2019, in Hyannis, Massachusetts. A draft of the final summary was provided to the Committee prior to the 2020 NCWM Interim Meeting for review and approval. Please note the sector summary report will only be available in the electronic version of NCWM Publication 15 and at www.ncwm.com/belt-weighing-sector; they will not be available in printed versions of NCWM Publication 15.

The next meeting of the NTEP Belt-Conveyor Scale Sector will be held in conjunction with the 2020 Weighing Sector Meeting scheduled for August 18-19, 2020 in San Antonio, Texas.

The NTEP Belt-Conveyor Scale Sector did not meet in 2020, however; all members of the sector did participate in a meeting of the Belt-Conveyor Scale Task Group hosted by Mr. John Barton (NIST OWM) on May 28, 2020. For minutes of the Task Group Meeting, please contact Mrs. Tina Butcher at tina.butcher@nist.gov.

The next meeting of the NTEP Belt-Conveyor Scale Sector will be held in conjunction with the 2021 Weighing Sector Meeting scheduled for August 17-18, 2021 with the location to be determined. For questions on the status of sector work or to propose items for a future meeting. For questions on the status of sector work or to propose items for a future meeting, please contact the sector Chair and/or the NTEP Administrator:

Mr. Peter Sirrico
Thayer/Hyer Industries
Email: psirrico@thayerscale.com

Mr. Darrell Flocken
NTEP Administrator
Phone: (614) 620-6134
Email: darrell.flocken@ncwm.com

NTEP Grain Moisture Meter and NIR Protein Analyzer Sectors:

The NTEP Grain Analyzer Sector met August 13, 2019 in Kansas City, MO. A draft of the final summary was provided to the Committee prior to the 2020 NCWM Interim Meeting for review and approval. Please note the sector summary report will only be available in the electronic version of NCWM Publication 15 and at www.ncwm.com/grain-sector; they will not be available in printed versions of NCWM Publication 15.

The next meeting of the NTEP Grain Moisture Meter and NIR Protein Analyzer Sectors is scheduled for August 11, 2020 in Kansas City, Missouri. For questions on the status of sector work or to propose items for a future meeting, please contact the Technical Advisor:

Ms. G. Diane Lee
NIST Office of Weights and Measures
Phone: (301) 975-4005
Email: diane.lee@nist.gov

The NTEP Grain Analyzer Sector held a video meeting on August 11, 2020. A draft of the final summary was provided to the Committee prior to the 2021 NCWM Interim Meeting for review and approval. Please note the sector summary report will only be available in the electronic version of NCWM Publication 15 and at www.ncwm.com/grain-sector; they will not be available in printed versions of NCWM Publication 15.

The next meeting of the NTEP Grain Moisture Meter and NIR Protein Analyzer Sectors is scheduled for August 10, 2021, in Kansas City, Missouri. For questions on the status of sector work or to propose items for a future meeting, please contact the sector Chair and/or the NTEP Administrator:

Mr. Karl Cunningham
Illinois
Email: karl.cunningham@illinois.gov

Mr. Darrell Flocken
NTEP Administrator
Phone: (614) 620-6134
Email: darrell.flocken@ncwm.com

NTEP Measuring Sector:

The NTEP Measuring Sector met September 24-25, 2019 in Denver, Colorado. A draft of the final summary was provided to the Committee prior to the 2020 NCWM Interim Meeting for review and approval. Please note the sector summary report will only be available in the electronic version of NCWM Publication 15 and at www.ncwm.com/measuring-sector; they will not be available in printed versions of NCWM Publication 15.

The next meeting of the NTEP Measuring Sector Meeting is scheduled for late September 22-23, 2020 in San Antonio, Texas. For questions on the status of sector work or to propose items for a future meeting, please contact the sector Technical Advisor:

Mrs. Tina Butcher
NIST Office of Weights and Measures
Phone: (301) 975-2196
Email: tina.butcher@nist.gov

The NTEP Measuring Sector held a video meeting on September 22-23, 2020. A draft of the final summary was provided to the Committee prior to the 2021 NCWM Interim Meeting for review and approval. Please note the sector summary report will only be available in the electronic version of NCWM Publication 15 and at www.ncwm.com/measuring-sector; they will not be available in printed versions of NCWM Publication 15.

The next meeting of the NTEP Measuring Sector Meeting is scheduled for late September 21-22, 2021 with the location to be determined. For questions on the status of sector work or to propose items for a future meeting, please contact the sector Chair and/or the NTEP Administrator:

Mr. Michael Keilty
Endress + Hauser Flowtec AG, USA
Email: michael.keilty@us.endress.com

Mr. Darrell Flocken
NTEP Administrator
Phone: (614) 620-6134
Email: darrell.flocken@ncwm.com

NTEP Software Sector:

The NTEP Software Sector met August 25-26, 2019 in Denver, Colorado. It was a joint meeting with the NTEP Measuring Sector. A final draft of the meeting summary was provided to the Committee prior to the 2020 NCWM Interim Meeting for review and approval. Please note that the sector summary report will only be available in the electronic version of NCWM Publication 15 and at www.ncwm.com/software-sector; copies will not be available in the printed versions of NCWM Publication 15.

The next meeting of the NTEP Software Sector is scheduled for August 11-12, 2020 in Kansas City, Missouri. The meeting will be a joint meeting of the NTEP Grain Analyzer Sector and Software Sector. For questions on the status of sector work or to propose items for a future meeting, please contact the sector Chair and/or the NTEP Administrator:

Mr. James Pettinato
Technip FMC
Phone: (814) 898-5250
Email: jim.pettinato@technipfmc.com

Mr. Darrell Flocken
NTEP Administrator
Phone: 614-620-6134
Email: darrell.flocken@ncwm.com

The NTEP Software Sector held a video meeting on August 12, 2020. It was a joint meeting with the NTEP Measuring Sector. A final draft of the meeting summary was provided to the Committee prior to the 2021 NCWM Interim Meeting for review and approval. Please note that the sector summary report will only be available in the electronic version of NCWM Publication 15 and at www.ncwm.com/software-sector; copies will not be available in the printed versions of NCWM Publication 15.

The next meeting of the NTEP Software Sector is scheduled for May 5-6, 2021 in Columbus, Ohio. The meeting will be a joint meeting of the Software Sector and the Multiple Dimensioning Measuring Device Work Group. For questions on the status of sector work or to propose items for a future meeting, please contact the sector Chair and/or the NTEP Administrator:

Mr. James Pettinato
Technip FMC
Email: jim.pettinato@technipfmc.com

Mr. Darrell Flocken
NTEP Administrator
Phone: (614) 620-6134
Email: darrell.flocken@ncwm.com

NTEP Weighing Sector:

The NTEP Weighing Sector met August 20-21, 2019, in Denver, Colorado. A final draft of the meeting summary was provided to the Committee prior to the 2020 NCWM Interim Meeting for review and approval. Please note that the sector summary report will only be available in the electronic version of NCWM Publication 15 and at <https://www.ncwm.com/ntep-about>; they will not be available in printed versions of NCWM Publication 15.

The next NTEP Weighing Sector meeting is scheduled for August 18-19, 2020 in San Antonio, Texas. For questions on the status of sector work or to propose items for a future meeting, please contact the sector Technical Advisor:

Mr. Rick Harshman
NIST Office of Weights and Measures
Phone: (301) 975-8107
Email: richard.harshman@nist.gov

The NTEP Weighing Sector held a video meeting on August 18, 2020. A final draft of the meeting summary was provided to the Committee prior to the 2021 NCWM Interim Meeting for review and approval. Please note that the

sector summary report will only be available in the electronic version of NCWM Publication 15 and at <https://www.ncwm.com/ntep-about>; they will not be available in printed versions of NCWM Publication 15.

The next NTEP Weighing Sector meeting is scheduled for August 17-18, 2021 with the location to be determined. For questions on the status of sector work or to propose items for a future meeting, please contact the sector Chair and/or the NTEP Administrator:

Mr. Rob Upright
VPG Transducers
Email: rob.upright@vishaypg.com

Mr. Darrell Flocken
NTEP Administrator
Phone: (614) 620-6134
Email: darrell.flocken@ncwm.com

NTEP Multiple Dimension Measuring Devices (MDMD) Work Group:

The NTEP MDMD Work Group met May 7-8, 2019, in Columbus, Ohio. A final draft of the meeting summaries was provided to the Committee prior to the 2020 NCWM Interim Meeting for review and approval. Please note the sector summary report will only be available in the electronic version of NCWM Publication 15 and at www.ncwm.com/mdmd-wg; they will not be available in printed versions of NCWM Publication 15.

The next NTEP MDMD Work Group meeting is scheduled for May 5-6, 2019 in Columbus, Ohio. For questions on the status of work group or to propose items for a future meeting, please contact Work Group Chair Chris Senneff or NTEP Administrator, Darrell Flocken.

Mr. Chris Senneff
Rice Lake Weighing Systems
Phone: 715-434-5175
Email: csenneff@ricelake.com

Mr. Darrell Flocken
NTEP Administrator
Phone: 614-620-6134
Email: darrell.flocken@ncwm.com

The NTEP Committee is scheduled to review and approve all 2019 NTEP Sector and Work Group reports during the 2020 Interim Meeting.

During the 2020 Interim Meeting, no comments were heard on this item.

The NTEP MDMD Work Group did not meet in 2020.

The next NTEP MDMD Work Group meeting is scheduled for May 4-5, 2021 in Columbus, OH. This meeting will be held in conjunction with the Software Sector Meeting scheduled for May 5-6, 2021 at the same location. For questions on the status of work group or to propose items for a future meeting, please contact Work Group Chair Chris Senneff or NTEP Administrator, Darrell Flocken.

Mr. Chris Senneff
Rice Lake Weighing Systems
Email: csenneff@ricelake.com

Mr. Darrell Flocken
NTEP Administrator
Phone: (614) 620-6134
Email: darrell.flocken@ncwm.com

The NTEP Committee is scheduled to review and approve all 2020 NTEP Sector and Work Group reports, for those sectors and work groups that met in 2020, during the 2021 Interim Meeting.

At the 2021 NCWM Interim Meeting, Mr. Darrell Flocken (NTEP Administrator) reported that the 2021 NTEP Sector and Task Group Meeting will be individually reviewed for the decision to hold the meeting in a virtual or in-person format.

CAP – CONFORMITY ASSESSMENT PROGRAM

CAP-1 I Conformity Assessment Program

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

The Conformity Assessment Program was established to ensure devices produced after the device has been type evaluated and certified by NTEP continue to meet the same requirements. This program has three major elements; 1) Certificate Review (administrative), 2) Initial Verification (inspection and performance testing); and 3) Verified Conformity Assessment (influence factors). This item is included on the Committee's agenda to provide an update on these elements.

Certificate Review:

Certificates are constantly under review by NTEP staff and laboratories. Many active certificates are amended annually because of manufacturer submission for evaluation or issues reported by the states pertaining to information on the certificate. When the devices are re-evaluated and certificates are amended, all information is reviewed, and necessary steps are taken to assure compliance and that accurate, thorough information is reported on the certificate.

To keep certificate information up to date, the Committee continues to offer an opportunity for active certificate holders to update contact information that is contained in the "Submitted By" box on certificates. This is offered during the payment period of their annual maintenance fee. Many CC holders have taken advantage of the opportunity for hundreds of NTEP certificates.

Initial Verification (IV):

The IV initiative is ongoing. Field enforcement officials perform an initial inspection and test on new installations on a routine basis. The Committee recognized that the states do not want IV reporting to be cumbersome.

An IV report form was developed several years ago. The Committee desired a simple form, perhaps web-based for use by state and local regulators. The form was approved by the Committee and distributed to the states. A completed form can be submitted via mail, e-mail, fax, or online. The forms are available on the Conformity Assessment Program web page at www.ncwm.com/conformity-assessment, or on the Forms web page at www.ncwm.com/helpful-forms, or by contacting the NCWM at info@ncwm.com or the NTEP Administrator at darrell.flocken@ncwm.com.

NTEP has acknowledged that the state, county, and city regulators have not bought into the IV report form. Industry representatives stated that IV is very important to ensure conformity assessment and the NCWM should push harder for reporting of non-compliance issues found during IV.

NTEP is open to suggestions on how to improve the reporting of non-compliant devices found during initial verification.

VCAP:

NCWM has been concerned about production meeting type and protecting the integrity of the NTEP CC since the inception of NTEP. The Board has consistently reconfirmed its belief that conformity assessment is vital to NTEP's continued success.

Seven weighing device categories subject to influence factors, as defined in NIST Handbook 44, were identified and are subject to VCAP audits. Certificate holders for these device types are required to have an on-site audit of the manufacturer's quality system and on-site random and/or review of a production device by an outside auditor to verify compliance with VCAP. The NTEP Committee and NCWM Board agreed not to include weighing/load receiving elements using NTEP load cells in the list of device categories subject to VCAP. However, the Board notified

certificate holders that they have no intention of amending the table of devices subject to influence factor testing found in the Weighing Devices Section of NCWM Publication 14.

The Committee has received letters, questions, and many other inquiries pertaining to VCAP. The Committee has worked diligently to answer the questions submitted in a very timely manner. The Committee knows that additional questions will be posed as VCAP progresses. Certificate holders and other interested parties are encouraged to submit written questions to the NTEP Committee. The Committee is pleased to report that it has been successful in answering all the questions to date. Clerical changes and additions have been made to affected VCAP documents as deemed necessary.

Load cells traceable to NTEP certificates were selected for the initial assessment effort. NCWM elected to require a systems audit checklist that is to be completed by an outside auditor and submitted to NCWM per Section 21.3.3.3.5 of the VCAP requirements. A VCAP Systems Audit Checklist for Manufacturers and a VCAP Systems Audit Checklist for Private Label Certificate Holders have been developed and are available on the website at <http://www.ncwm.com/vcap>. Additionally, the Committee developed a new NCWM Publication 14, administrative policy to distinguish between the requirements for parent NTEP certificate holders (21.3.2) and private label certificate holders. The requirements in 21.3.3.7 track the private label checklist requirements: traceability of the private label NTEP CC to its parent NTEP CC, traceability of the parent NTEP CC to a VCAP audit, purchase and sales records, plan to report non-conforming product and non-conforming product in stock, plan to conduct internal audits to verify non-compliance action, and internal audit records.

VCAP Audits:

The Committee had discussions about the required number of audits for facilities that manufacture multiple device types. For example, if a company had successful audits for two device types, they might submit a request for a delay from audit requirements for remaining device types, stating that they are all subjected to the same processes and will be audited in the next cycle. The Committee agreed to the request in principal and directed the NTEP Administrator proposed a change to the VCAP Policy language. This change was adopted by the NCWM Board in 2013.

During the 2020 Interim Meeting, no comments were heard on this item.

During the 2021 Annual Meeting, no comments were heard on this item.

CAP-2 I Timelines for Remaining Device Categories Subject to VCAP

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

Source:

NTEP Committee

Item Under Consideration:

NCWM decided to include the remaining device categories subject to VCAP as soon as practicable. In 2016, the Committee worked to develop a timeline to include the remaining categories. NTEP has developed timelines to phase in the remaining device categories. The timelines identify the inclusion of the remaining device types into the NTEP, Verified Conformity Assessment Program. The timeline includes both manufacturers and private label holders of Certificates of Conformance for the device type. The NTEP Committee is moving forward with the following timelines.

The one remaining device that has not reached the end of its compliance deadline is Belt Conveyor Scale. The timeline for this device is shown below.

NCWM/NTEP VCAP Compliance Timeline Belt-Conveyor Scales (weigh-belt systems only)					
July 2020 - Sept 2020	July 2020 - Nov 2021	July 2020 - May 2022	July 2020 - June 2022	Dec 2021	June 2022
NTEP notifies active CC holders of VCAP requirements	Parent CC holders to put VCAP QM system in place	Private Label CC holders to put VCAP QM system in place	NTEP evaluates incoming audit reports	NCWM declares CCs inactive if Parent CC holder fails to comply with VCAP	NCWM declares CCs inactive if Private Label CC holder fails to comply with VCAP
	CC holder to have audit completed by authorized auditing company	CC holder to have audit completed by authorized auditing company	NTEP contacts CC holders not meeting VCAP requirements to encourage compliance		
	Submit audit report to NCWM/NTEP	Submit audit report to NCWM/NTEP			

Additional comments from affected stakeholders are welcomed and appreciated.

No comments were heard on this item during the 2020 Interim Meeting Open Hearings; however, during the Committee's Work Session on Wednesday morning, the Committee forwarded the recommendation to adopt the change to the device type, as listed in item ADM-3 of this report, to the Board of Directors. The Board of Directors then adopted the change as written in the agenda item. In the 2020 NCWM Annual Meeting, NTEP Committee Report, the device Timeline Compliance Table will be revised to reflect the change in device type and the timeline dates will be adjusted to reflect a starting time of January 2020 and all later dates will be adjusted to reflect a compliance timeline of 18 months maximum for both manufacturers and private label certificate holders.

ADM – NCWM PUBLICATION 14, ADMINISTRATIVE POLICY

ADM-1 I Amend VCAP Sections 21.1.3.1. and 21.1.3.6.

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

Source:

Scale Manufacturers Association (SMA)

Purpose:

Clarify NTEP Administrative Policy VCAP requirements list for both original (Section 21.1.3.1.) and private label (Section 21.1.3.6.) certificate holders to show there is a capacity limitation that applies.

Item Under Consideration:

Amend NCWM Publication 14, Administrative Policy, Section 21.1.3.1. NTEP VCAP Procedures as follows:
21.1.3.1 Devices that Must Meet this Requirement are Limited to the List Below:

- Load Cell (T.N.8.)
- Indicating Elements (T.N.8.)

- Weighing/Load Receiving Elements 2000lb capacity and less with non-NTEP Load Cells (T.N.8.)
- Complete Scales 2000lb capacity and less (T.N.8.)
- Automatic Weighing Systems 2000lb capacity and less (T.7.)
- Belt-Conveyor Scales 2000lb capacity and less (T.3)
- Automatic Bulk Weighing Systems 2000lb capacity and less (T.7.)

Amend NCWM Publication 14, Administrative Policy, Section 21.1.3.6. NTEP VCAP Procedures for Private Label Certificate Holders as follows:

Section 21.1.3.6 Devices that Must Meet this Requirement are Limited to the List Below:

- Load Cell (T.N.8.)
- Indicating Elements (T.N.8.)
- Weighing/Load Receiving Elements 2000 lb capacity and less with non-NTEP Load Cells (T.N.8.)
- Complete Scales 2000 lb capacity and less (T.N.8.)
- Automatic Weighing Systems 2000 lb capacity and less (T.7.)
- Belt-Conveyor Scales 2000 lb capacity and less (T.3)
- Automatic Bulk Weighing Systems 2000 lb capacity and less (T.7.)

Justification:

The requirements for VCAP influence testing do not clarify that they are for devices of 2000 lb or less. This stipulation is generally known, but it needs to be properly documented in the handbook to eliminate any “grey areas” of enforcement for VCAP audits.

During the November 2019 Board of Directors and NTEP Committee Meeting, the NTEP Committee recommended that the Board of Directors approve the proposed capacity limitation for devices with a capacity greater than 2000 lb. The Board of Directors approved this change. The wording change will appear in the 2020 edition of Publication 14, Administrative Policy.

During 2020 Interim Meeting open hearings, NTEP Chair Benjamin reported that the addition of the 2000 lb capacity limitation was approved during the November 2019 Board of Directors/NTEP Committee Meeting. The item will remain on the Committee agenda through the NCWM 2020 Annual Meeting for recording reasons. No other comments were heard on this item.

ADM-21.1 I Add Multiple Dimensioning Measuring Devices (MDMD) and Grain Analyzers to VCAP Device List

Source:

NTEP Administrator

Purpose:

Add MDMD and Grain Analyzers to the current list of device types that require VCAP compliance.

Item Under Consideration:

Modification of Publication 14, Administrative Policy, paragraphs 21.3.1. and paragraph 21.3.6. as shown below.

21.3.1. Devices that Must Meet this Requirement are Limited to the List Below:

- Load Cell (T.N.8.)
- Indicating Elements (T.N.8.)
- Weighing/Load Receiving Elements 2000 lb capacity and less with non-NTEP Load Cells (T.N.8.)
- Complete Scales 2000 lb capacity and less (T.N.8.)
- Automatic Weighing Systems 2000 lb capacity and less (T.7.)
- Belt-Conveyor Scales (weigh-belt systems only) 2000 lb capacity and less (T.3)
- Automatic Bulk Weighing Systems 2000 lb capacity and less (T.7.)
- **Multiple Dimensioning Measuring Devices (T.5.)**
- **Grain Analyzers (T.N.8.)**

21.3.6. Devices that Must Meet this Requirement are Limited to the List Below:

- Load Cell (T.N.8.)
- Indicating Elements (T.N.8.)
- Weighing/Load Receiving Elements 2000 lb capacity and less with non-NTEP Load Cells (T.N.8.)
- Complete Scales 2000 lb capacity and less (T.N.8.)
- Automatic Weighing Systems 2000 lb capacity and less (T.7.)
- Belt-Conveyor Scales (weigh-belt systems only) 2000 lb capacity and less (T.3)
- Automatic Bulk Weighing Systems 2000 lb capacity and less (T.7.)
- **Multiple Dimensioning Measuring Devices (T.5.)**
- **Grain Analyzers (T.N.8.)**

The addition of MDMD and Grain Analyzers to the current list of devices is consistent with the scope of the VCAP Policy, that being, all devices that require influence factor testing during the NTEP evaluation and certification process are subject to VCAP Policy requirements.

During the 2021 NCWM Interim Meeting, no comments were heard on this item.

During the 2021 NCWM Annual Meeting, no comments were heard on this item.

ADM-2 I Change VCAP Audit Frequency in Sections 3.2.16. and 3.7.10.

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

Source:

Scale Manufacturers Association (SMA)

Purpose:

Change NTEP Administrative Policy VCAP surveillance requirements for both original (Section 3.2.16.) and private label (Section 3.7.10.) certificate holders so audit frequency can be extended from every 3 years to every 5 years.

Item Under Consideration:

Amend NCWM Publication 14, Administrative Policy, Section 21.3.2.16. NTEP VCAP Procedures for Private Label Certificate Holders as follows:

21.1.3. NTEP Verified Conformity Assessment Program Procedures

...

21.1.3.2.16. Subsequent audits will be held on-site to verify conformance to these standards. Subsequent audits will be conducted every three years ~~until objective evidence is obtained to move to a maximum of every five years.~~

...

Amend NCWM Publication 14, Administrative Policy, Section 21.3.7.10. NTEP VCAP Procedures for Private Label Certificate Holders as follows:

21.1.3.7.10. Surveillance audits for VCAP conducted by an outside auditor representing a certification every three years ~~until objective evidence is obtained to move to a maximum of every five years.~~

...

Previous Item Under Consideration:

Amend NCWM Publication 14, Administrative Policy, Section 21.3.2.16. NTEP VCAP Procedures for Private Label Certificate Holders as follows:

21.1.4. NTEP Verified Conformity Assessment Program Procedures

...

21.1.3.2.16. Subsequent audits will be held on-site to verify conformance to these standards. ~~Subsequent audits will be conducted every three years until objective evidence is obtained to move to a maximum of every five years.~~ The first subsequent audit shall be conducted within three years of the initial audit, after which the audit frequency becomes five years.

...

Amend NCWM Publication 14, Administrative Policy, Section 21.3.7.10. NTEP VCAP Procedures for Private Label Certificate Holders as follows:

21.1.3.7.10. Surveillance audits for VCAP conducted by an outside auditor ~~representing a certification every three years until objective evidence is obtained to move to a maximum of every five years.~~ A subsequent surveillance audit shall be conducted within three years of the initial audit, after which the audit frequency becomes five years.

...

Original Proposal:

Amend NCWM Publication 14, Administrative Policy, Section 21.3.2.16. NTEP VCAP Procedures as follows:

3.2.16. ~~Subsequent audits will be held on-site to verify conformance to these standards. Subsequent audits will be conducted every three years until objective evidence is obtained to move to a maximum of every five years.~~

Surveillance audits shall be conducted at the manufacturer's facility to verify conformance to these standards. These audits will be conducted every (3) years until the following criteria has been met:

- The manufacturer has completed at least (2) surveillance audits by a VCAP auditor.
- No major non-conformances are reported on the previous (2) surveillance audits.
- All actions taken to correct minor non-conformances have been verified and accepted by the auditor.

Once these criteria have been met the manufacturer may notify the VCAP administrator and request that the surveillance audit schedule be extended to every (5) years. The (5) year audit schedule will apply until any of the criteria is not met, at which point the audit schedule will reset back to every (3) years and the process will begin anew.

Amend NCWM Publication 14, Administrative Policy, Section 21.3.7.10. NTEP VCAP Procedures for Private Label Certificate Holders as follows:

3.7.10. ~~Surveillance audits for VCAP conducted by an outside auditor representing a certification every three years until objective evidence is obtained to move to a maximum of every five years.~~

Surveillance audits shall be conducted at the manufacturer's facility to verify conformance to these standards. These audits will be conducted every (3) years until the following criteria has been met:

- **The manufacturer has completed at least (2) surveillance audits by a VCAP auditor.**
- **No major non-conformances are reported on the previous (2) surveillance audits.**
- **All actions taken to correct minor non-conformances have been verified and accepted by the auditor.**

Once these criteria have been met the manufacturer may notify the VCAP administrator and request that the surveillance audit schedule be extended to every (5) years. The (5) year audit schedule will apply until any of the criteria is not met, at which point the audit schedule will reset back to every (3) years and the process will begin anew.

NTEP administration has internally discussed the proposals and did not support the proposals as originally written but could consider support if; a) The criteria were changed to require both audits to be performed by the same auditor., and b) The criteria were changed to place the responsibility/decision of extending the resetting of the audit timeline, based upon the criteria, to the auditor.

During the 2019 NCWM Interim Meeting in Charleston, South Carolina, the changes suggested by the NTEP Administration was presented for comments. During the open hearing, no support for the suggested changes was heard. The Committee heard comments that suggested change eliminated the possibility to change auditing firms during a 3-year period. The Committee heard a proposal from Mr. Eric Golden suggesting the extended audit frequency to a simpler requirement based on the number of previous external audits. This suggestion grew into the revised proposal shown above.

During the November 2019 Board of Directors and NTEP Committee Meeting, the NTEP Committee discussed this item and felt that additional work is needed. The Committee also felt that this item should be linked to a new item dealing with the certification of 2nd party auditing firms or individual. The NTEP Administrator was assigned the responsibility of developing a proposal to implement a certification plan.

During the 2020 Interim Meeting open hearings, the Committee was reminded that the possibility to extend the audit frequency to 5 years was already in the VCAP Policy, however; no criteria was included to identify when the switch to a 5-year frequency was possible. During the Committee work session, the members discussed the idea of separating the discussion of the certification of 2nd party auditing firms or individual and keep this item focused on the audit frequency. During their March 2020 NTEP Committee Meeting, the Committee will be presented with the current proposal along with the amended wording offered by Mr. Golden (Cardinal Scale Manufacturing Company). From this discussion, the item will be updated and presented for comments during the NCWM 2020 Annual Meeting. A new proposal will be developed and included the March 2020 Meeting agenda regarding the certification of 2nd party auditing firms or individuals.

During the 2021 NCWM Interim Meeting, Mr. Darrell Flocken (NTEP Administrator) explained the origin of this item and reviewed the current proposal. Mr. Craig VanBuren (NTEP Committee Chair) asked the memberships if the extension to five years would have any negative impact on the program. Mr. Flocken commented that he had received

a few comments from auditing firms stating that five years between audits was longer than the customary time period. Mr. Lou Straub (Fairbanks Scales) commented that this item has been on the NTEP Committee agenda three years, and he hopes it moves forward in a timely manner. Mr. Straub voiced his support of increasing the period to five years and asked when the Committee felt a resolution would be made. Mr. Eric Golden (Cardinal Scale) mentioned that the 5-year time is currently mentioned in the VCAP Policy and questioned why. Mr. Flocken provided the history of the policy development and explained that the idea of extending the period was based on information documented in previous versions of the ISO 9001:2008 standard. Mr. VanBuren informed the membership that the NTEP Committee will forward a recommendation to the NCWM Board of Directors by the 2021 NCWM Annual Meeting.

The NTEP Committee reviewed the item during their April Meeting and agreed that an extension of the audit frequency to 5 years was not in the best interest of the program. It was reported that the current 3-year audit cycle is in line with other auditing programs and that the required year 1 and 2 audits may be performed by internal company personnel; this provides relief that is not offered by other similar programs. The NTEP Committee Members asked Mr. Flocken to amend the proposal to remove the reference to a 5-year audit cycle and agreed to forward the proposal to the NCWM Board of Directors with the recommendation to adopt the Item Under Consideration, shown above. Mr. Flocken will report the actions of the NCWM Board of Directors during the NTEP Committee's Open Hearing during the 2021 NCWM Annual Meeting in July.

During the 2021 NCWM Annual Meeting, Mr. VanBuren (NTEP Committee Chair) reported that this item was presented to the NCWM Board of Directors for consideration during their July Meeting. The NTEP Committee's recommendation to the Board of Directors was to amend the current policy to remove reference to the possibility of a 5 year audit cycle. The support for this recommendation came from comments heard from members of the NTEP Committee and the NCWM Board of Directors, as well as comments received from two third-party certification Bodies familiar with the VCAP auditing process.

At the conclusion of their meeting, the NCWM Board of Directors informed the NTEP Committee of their decision to support the removal of the 5-year audit cycle. The 2022 Publication 14, Administrative Policy will be amended to reflect the change. This item will be removed from the NTEP Committee Agenda.

ADM-21.2 I Correction to VCAP Policy to add NCWM Technical Employee Responsibilities to the Paragraphs 21.3.8., 21.3.8.2., and 21.3.8.3.

Source:

NTEP Administrator

Purpose:

Recognize an NCWM technical employee as a VCAP auditor and define their responsibilities for private labeler audits as currently recognized in for manufacturers audits.

Item Under Consideration:

Amend Administrative Policy paragraphs 21.1.3.8., 21.1.3.8.2., and 21.1.3.8.3., as shown below, to be consistent with paragraphs 21.1.3.3., 21.1.3.3.4., and 21.1.3.3.5.

21.1.3.8 Certification Body's Responsibilities and NCWM Technical Employee Responsibilities:

21.1.3.8.2 The selected Certification Body (auditor) shall be accredited to the ISO 9001:2008 standard for providing audits and certifications of management systems.

21.1.3.8.3 The Certification Body or NCWM technical employee is required to notify NCWM when a major breakdown of the NTEP private label CC holder's VCAP program is found.

21.1.3.8.4 The Certification Body or NCWM technical employee shall submit a completed "VCAP Systems Audit Checklist for Private Label Certificate Holders" to NCWM. Submitted documentation must contain a clear statement of compliance as a result of the VCAP audit.

During the 2021 NCWM Interim Meeting, no comments were heard regarding this item.

During the 2021 NCWM Annual Meeting, no comments were heard on this item.

ADM-21.3 I Enhance VCAP Policy to Require 2nd Party Auditors to be Certified By NTEP

Source:

NTEP Administrator

Purpose:

Add the requirement that individual auditors associated with a Certification Body, are required to have successfully completed an NCWM, VCAP Auditor Certification Class before being qualified to perform VCAP audits on manufacturers holding an NTEP Certificate of Conformance. The proposal also removes the accreditation requirement based on Standard Industry Classification codes and updates the certification body auditors to require accreditation to ISO 9001:2018 from the currently stated ISO 9001:2008.

Item Under Consideration:

Revise paragraph 21.1.3.3 Certification Body's Responsibilities and NCWM Technical Employee Responsibilities as follows:

21.1.3.3 Certification Body's Responsibilities and NCWM Technical Employee Responsibilities:

- 21.1.3.3.1 The selected Certification Body is to be accredited by ANSI-ASQ National Accreditation Board (ANAB) or by a Signatory of the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition. The ANSI, ANAB and ILAC are accreditation bodies for management systems. ANAB and ILAC accredit certification bodies (CBs) for ISO 9001 quality management systems (QMS), ISO 17025 laboratory testing facilities and ISO 14001 environmental management systems (EMS), ~~as well as a number of industry-specific requirements.~~
- ~~21.1.3.3.2 With accreditation to Standard Industry Classification (SIC) codes (3596/3821) or equivalent.~~
- ~~Sequence Number 2007 NAICS, U.S. Code 2007 NAICS U.S. Title
847 333997 Scale and Bench Manufacturing~~
- The auditor representing the Certification Body shall have successfully completed the NCWM, Verified Conformity Assessment Program Training Class. (Effective January 1, 20xx.)
- 21.1.3.3.2. Auditor training may be conducted in person, or via video conferencing, at the trainer discretion. A Train-the-Trainer method may be used by Certification Bodies that have an internal training program, however; all training performed through an internal training program must be conducted in person.

Original Proposal:

Revise paragraph 21.1.3.3 Certification Body's Responsibilities and NCWM Technical Employee Responsibilities as follows:

21.1.3.3 Certification Body's Responsibilities and NCWM Technical Employee Responsibilities:

- 21.1.3.3.3 The selected Certification Body is to be accredited by ANSI-ASQ National Accreditation Board (ANAB) or by a Signatory of the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition. The ANSI, ANAB and ILAC are accreditation bodies for management systems. ANAB and ILAC accredit certification bodies (CBs) for ISO 9001 quality management systems (QMS), ISO 17025 laboratory testing facilities and

ISO 14001 environmental management systems (EMS), ~~as well as a number of industry-specific requirements.~~

~~21.1.3.3.4 With accreditation to Standard Industry Classification (SIC) codes (3596/3821) or equivalent.~~

~~Sequence Number 2007 NAICS, U.S. Code 2007 NAICS U.S. Title~~

~~847 333997 Scale and Bench Manufacturing~~

The auditor representing the Certification Body shall have successfully completed the NCWM, Verified Conformity Assessment Program Training Class. (Effective January 1, 20xx.)

~~21.1.3.3.3~~ 21.1.3.3.2.

~~21.1.3.3.4~~ 21.1.3.3.3.

~~21.1.3.3.5~~ 21.1.3.3.4.

This adoption of this item will increase the consistence and quality of a VCAP audit. Qualified auditors are well trained for auditing procedures, but often do not understand the technical requirements the VCAP Policy places on the sample testing to influence factors. This change to the policy would require audits to receive training which would be focused on the technical requirements.

At the NCWM 2021 Interim Meeting, no comments were heard on this item.

During the April NTEP Committee Meeting, the NTEP Committee agreed with the proposed policy change and suggested this item be forward to the NCWM Board of Directors with the recommendation to adopt the change. Mr. Darrell Flocken (NTEP Administrator) reviewed the proposal and determined that additional changes are needed to address issues such as allowing the idea of Train-the-Trainer for Certification Bodies that have internal training programs, and online (video) training classes for national and international auditors. The Item Under Consideration, shown above, has been modified to add policy statement for consideration.

During the 2021 NCWM Annual Meeting, no comments were heard on this item.

ADM-21.4 I Update reference to auditors accreditation to ISO 9001:2018

Source:

NTEP Administrator

Purpose:

Updates the certification body auditors for private label audits to require accreditation to ISO 9001:2018 from the currently stated ISO 9001:2008.

Item Under Consideration:

Revise paragraph 21.1.3.8.1. as shown below:

21.1.3.8.1 The selected Certification Body (auditor) shall be accredited to the ISO 9001:2008 **2018** standard for providing audits and certifications of management systems.

At the NCWM 2021 Interim Meeting, the Committee heard no comments regarding this item.

During the 2021 NCWM Annual Meeting, no comments were heard on this item.

ADM-21.5 I Expand VCAP to Include Devices That do not Require Influence Factor Testing during the NTEP Certification Evaluation

Source:

NTEP Administrator

Purpose:

Modify VCAP Policy to include NTEP certified devices which do not undergo influence testing during the evaluation process.

Item Under Consideration:

Amend the current VCAP Policy as shown below.

3. NTEP Verified Conformity Assessment Program Procedures

Manufacturers of Many NTEP certified devices must **ensure that ongoing production of these NTEP certified devices must continue to** meet *NIST Handbook 44* requirements for ~~influence factors~~ **the device type**. It is not **always** possible to verify **compliance to** these requirements during the Initial Verification in the field. Therefore, manufacturers of **NTEP certified** metrological devices (instruments) and/or components (modules) ~~which are subject to influence factors, as defined in NIST Handbook 44,~~ must have a Verified Conformity Assessment Program (VCAP) in place to ensure that these metrological devices and/or components are produced to perform at a level consistent with that of the device and/or component previously certified. The Verified Conformity Assessment Program audit will be at one or more sites as required to verify compliance.

For weighing devices that are subject to influence factors, NTEP will require an ~~initial~~ on-site audit of the manufacturer's quality system and on-site random testing and/or review of a production device(s) (instrument(s)) by the Registrar to verify that all items listed below are currently implemented and functioning to verify compliance to the appropriate sections of *NIST Handbook 44*. **For all other devices, NTEP will require an on-site audit of the manufacturer's quality system.**

It is important for NTEP to know the types of devices included in the VCAP audit and it is for this reason that the certificate holder shall prepare a controlled quality management system (QMS) document listing the range of parameters that cover the devices included in the audit. The certificate holder shall include in this document all certificates and device parameters (For example, **but not limited to:** different models, capacities, **flow rates**, e-min, n-max, sizes-etc.) for the applicable device category. ~~For example, in a load cell audit, a range of capacities of the load cells included in the audit shall be listed in the report.~~ This document shall be available for the VCAP auditor and NTEP upon request and may be included as an annex to the audit report if desired

3.1. Requirements by Device Type

3.1.1. **Weighing** devices that must meet **influence factor testing** ~~this requirement~~ are limited to the list below:

- Load Cell (T.N.8.)
- Indicating Elements (T.N.8.)
- Weighing/Load Receiving Elements 2000 lb capacity and less with non-NTEP Load Cells (T.N.8.)
- Complete Scales 2000 lb capacity and less (T.N.8.)
- Automatic Weighing Systems 2000 lb capacity and less (T.7.)
- Belt-Conveyor Scales (weigh-belt systems only) 2000 lb capacity and less (T.3)
- Automatic Bulk Weighing Systems 2000 lb capacity and less (T.7.)

3.1.2. All other weighing and measuring devices must meet the quality control requirements of this policy

3.2. Requirements, The NTEP CC Holder's Control Facility Responsibilities:

3.2.1. A documented Quality Management System governing the design and manufacture of the device.

- 3.2.1.1 The NTEP CC holder shall prepare documentation of its various quality activities and practices required by this document and by NCWM's Verified Conformity Assessment Program policy and procedures; and shall demonstrate the effective implementation of those activities and practices. This should include (and/or reference) the manufacturer's quality manual, written procedures and work instructions, flowcharts, diagrams, drawings, etc., as appropriate.

3.2.1.2. In addition to the requirements stated in 3.2.1.1., the following requirement apply to devices that requirement influence testing.

..... Renumber, as needed to next proposed change.

- 3.2.4.1. The NTEP CC holder, **for weighing devices subject to influence factor testing** shall establish a random sampling plan appropriate for the production quantity of the device that is traceable to a nationally recognized quality standard, i.e., Acceptable Quality Level AQL or equivalent, or meet the minimum requirements as defined in Section 21.1.3.5 of this document.
- 3.2.4.1.1. The NTEP CC holder shall maintain a controlled document listing all the devices, their estimated annual production quantity, the CC number of the device and the date that the device was added to or removed from the sampling plan.
- 3.2.4.1.2. Devices shall be selected and tested in accordance to NCWM Publication 14 as designated by the established sampling plan.
- 3.2.4.1.3. Results of the testing, along with values of pertinent control parameters (e.g., time, temperature, humidity, etc.), shall be recorded and shall clearly identify whether the test passed or failed.
- 3.2.4.1.4. Records shall be made available to the VCAP auditor of test results since the last VCAP audit.

..... Renumber, as needed to next proposed change.

3.5. Sample Sizes:

- 3.5.1. **For devices subject to influence factor testing,** The following sample sizes are to be used based on annual production.

<u>Units per Year</u>	<u>Minimum Number (total of samples production) per Year</u>
2 – 50	2
51 – 500	3
501 – 35,000	5
35,001+	8

NTEP Verified Conformity Assessment Program Procedures for Private Label Certificate Holders

Manufacturers of Many NTEP certified devices must **ensure that ongoing production of these NTEP certified devices must continue to** meet *NIST Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*, requirements for ~~influence factors~~ **the device type**. It is not **always** possible to verify **compliance to** these requirements during the Initial Verification in the field. Therefore, manufacturers of **NTEP certified** metrological devices (instruments) and/or components (modules), ~~which are subject to influence factors, as defined in NIST Handbook 44,~~ must have a Verified Conformity Assessment Program (VCAP) in place to ensure that these metrological devices and/or components are produced to perform at a level consistent with that of the device and/or component previously certified.

For ~~weighing devices that are subject to influence factors,~~ **for NTEP certified devices** traceable to a private label NTEP Certificate of Conformance, NTEP will require **an on-site audit of** the private label certificate holder **quality system** to verify that the parent certificate holder has complied with VCAP requirements, has a current VCAP audit certificate, the VCAP certification is traceable back to the parent NTEP certificate, and the parent certificate is active.

It is important for NTEP to know the types of devices included in the VCAP audit and it is for this reason that the certificate holder shall prepare a controlled quality management system (QMS) document listing the range of parameters that cover the devices included in the audit. The certificate holder shall include in this document all certificates and device parameters (For example: **but not limited to,** different models, capacities, e-min, n-max, sizes etc.) for the applicable device category. ~~For example, in a load cell audit, a range of capacities of the load cells included in the audit shall be listed in the report.~~ This document shall be available for the VCAP auditor and NTEP upon request and may be included as an annex to the audit report if desired.

3.1. Devices that Must Meet this Requirement are Limited to the List Below:

Load Cell (T.N.8.)

Indicating Elements (T.N.8.)

Weighing/Load Receiving Elements 2000 lb capacity and less with non NTEP Load Cells (T.N.8.)

Complete Scales 2000 lb capacity and less (T.N.8.)

Automatic Weighing Systems 2000 lb capacity and less (T.7.)

Belt Conveyor Scales (weigh belt systems only) 2000 lb capacity and less (T.3)

Automatic Bulk Weighing Systems 2000 lb capacity and less (T.7.)

3.2. 3.1. Requirements: The Private Label NTEP CC Holder's Responsibilities:

..... *Renumber, as needed to the end of the section.*

During the 2021 NCWM Interim Meeting, no comments were heard regarding this item.

During the 2021 NCWM Annual Meeting, no comments were heard on this item. Mr. Darrell Flocken (NTEP Administrator) provided comments to the membership encouraging company's impacted by the adoption of this proposal offer their support or changes to improve the overall intent of the proposal.

ADM-21.6 I Revised Administrative Policy, Section 9.2. to Include Action Based on Unpaid Evaluation Fees

Source:

NTEP Administrator

Purpose:

Modify NTEP Application Policy to include a decision to reject an application based on the existence of an overdue invoice for evaluation services performed by an NTEP Participating Laboratory or Field Evaluator.

Item Under Consideration:

Amend Administrative Policy, Section 9.2.1 as shown below.

9. Process to Obtaining Type Evaluation and NTEP Certification

The type evaluation process follows a sequence of steps. These are explained further in this section.

The type evaluation process is the first step of regulatory involvement in the legal metrology control system. Test criteria and procedures are contained in *Weighing Devices*, *Measuring Devices* and *Grain Moisture Meters & Near Infrared Grain Analyzers* sections of *NCWM Publication 14*.

9.1. Filing an Application

.....

9.2. Processing an Application

1. The **NCWM Coordinator or the** NTEP Administrator will review the application and either accept or reject the request. A decision to reject an application ~~is~~ **will be** based ~~solely~~ upon **one or both of the following considerations:**

- 1.1. **Any overdue invoice from either a participating NTEP Laboratory, or an NTEP Field Evaluator, for services performed on a previous device evaluation, or**

- 1.2. **The** inability of NTEP to perform an evaluation on the device due to lack of procedures in *NCWM Publication 14 Weighing Devices*, *Measuring Devices* or *Grain Moisture Meters & Near Infrared Grain Analyzers*.

2. If accepted, the NTEP Administrator will assign the evaluation to a Participating Laboratory. See *Section 8 Participating Laboratories*.

.....

During the April NTEP Committee Meeting, the Committee Members agreed to add this item to the NTEP Committee Report to receive comments for the NCWM Membership during the remainder of the 2021 and the complete 2022 meeting cycle.

During the 2021 NCWM Annual Meeting, no comments were heard on this item.

ADM-3 I Exclude Large Belt-Conveyor Scales from VCAP Device Listing Sections 21.3.1. and 21.3.6.

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

Source:

Rice Lake Weighing Systems, Inc.

Purpose:

Exclude large belt-conveyor scales from VCAP testing.

Item Under Consideration:

Amend NCWM Publication 14, Administrative Policy, Sections 21.3.1. and 21.3.6. as follows:

21.3.1. Devices that Must Meet this Requirement are Limited to the List Below:

- Load Cell (T.N.8.)
- Indicating Elements (T.N.8.)
- Weighing/Load Receiving Elements with non-NTEP Load Cells (T.N.8.)
- Complete Scales (T.N.8.)
- Automatic Weighing Systems (T.7.)
- Belt-Conveyor Scales (weigh-belt systems only) (T.3)
- Automatic Bulk Weighing Systems (T.7.)

21.3.6 Devices that Must Meet this Requirement are Limited to the List Below:

- Load Cell (T.N.8.)
- Indicating Elements (T.N.8.)
- Weighing/Load Receiving Elements with non-NTEP Load Cells (T.N.8.)
- Complete Scales (T.N.8.)
- Automatic Weighing Systems (T.7.)
- Belt-Conveyor Scales (weigh-belt systems only) (T.3)
- Automatic Bulk Weighing Systems (T.7.)

Justification:

In general, belt-conveyor scales are large installations that do not fit into standard climate chambers. For this reason, type evaluation is performed using specially constructed models that will fit into the lab's climate chamber. This would not be practicable for on-going quality control like VCAP. Weigh-belt systems, on the other hand, come in sizes that can be accommodated in a standard climate chamber and so would be included as part of the VCAP program.

During the November 2019 Board of Directors and NTEP Committee Meeting, the NTEP Committee discussed this proposal and agreed that it had merit. The Committee would like to hear comments in support or opposition for this item from interested parties.

During the 2020 Interim Meeting no comments were heard on this item during the open hearings; however, during the NTEP Committees Work Session on Wednesday morning, the NTEP Committee forwarded, to the Board of Directors, the recommendation to adopt the change to the device type. The Board of Directors then adopted the change as written in the agenda item. The device change will be made to the appropriate section of the VCAP Policy in the 2020 edition of Publication 14, Administrative Policy. The item will remain on the committee agenda through the NCWM 2020 Annual Meeting for recording reasons.

OTH – OTHER ITEMS

OTH-1 I Electronic Vehicle Fueling Systems (EVFS)

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

The California Division of Measurement Standards and NTEP Measuring Laboratories are working with U.S. National Work Group Representatives and other experts to develop an NTEP checklist for electronic vehicle supply equipment (EVSE).

In July 2015, the NCWM adopted a tentative code for electronic vehicle fueling systems. The tentative code includes a provision that allows NTEP to accept EVSE for type evaluation to the Handbook 44 code. The USNWG for EVSE developed the tentative code in Handbook 44 and has been working to address evaluation criteria (NTEP checklist) and test standards to be used.

The NTEP Measuring Labs discussed the item during their meeting on September 20, 2016. The consensus of the laboratories was that the examination procedure outline developed by the State of California was not in a proper NCWM Publication 14 checklist format. Another prime issue that is still being developed is the test equipment necessary to test these devices. NTEP cannot evaluate without standards for test equipment. Will NIST traceability be required? The Measuring Laboratories concluded that the present NCWM Publication 14 checklist for RMFDs would be a good starting point to use in drafting a NCWM Publication 14 checklist for EVSE. The NTEP Administrator and NTEP Measuring Laboratories recommend the NCWM Board of Directors/NTEP Committee consider establishing an NTEP Work Group or Task Force to address the EVSE issues.

The NTEP Committee agreed with the recommendations of the NTEP Measuring Laboratories and worked to establish a NTEP EVSE Work Group. The NTEP EVSE Work Group was developed with Mr. Andrei Moldoveanu (Senior Program Manager for NEMA) appointed as Chair. The Work Group currently consisted of three public sector members and five private sector members representing associate membership.

THE NTEP EVSE Work Group (WG) had their kick-off web-based meeting March 14, 2017. The WG had monthly web meetings with the initial goal of having a draft checklist ready for NCWM Board/NTEP Committee review. Significant progress has been made and during the 2018 Interim Meeting the NTEP Committee reviewed the updated Work Group's draft NTEP checklist. NTEP was given permission to proceed with checklist development and evaluations as deemed appropriate. NTEP is working with NIST/OWM to ensure proper requirements for test standards and test procedures are in place. Some technical policy issues still need to be worked out. Additionally, NTEP found out that many of these devices also have a timing feature to allow a charge for parked time (similar to a parking meter). NTEP will work to develop a timing feature supplemental checklist to the EVSE checklist.

The next scheduled conference call for the EVSE Work Group is scheduled for Tuesday, January 7, 2020.

The California Lab has purchased EVSE test standards for both laboratory and field testing. The test standards are out for certification. NTEP expects to perform the initial evaluation of an EVSE device in early 2020.

For questions on the status of the work group please contact NTEP Administrator Mr. Flocken at darrell.flocken@ncwm.com.

During the 2020 Interim Meeting, no comments were heard on this item.

At the 2021 NCWM Interim Meeting, no comments were heard on this item.

The EVSE Work Group completed the 2nd draft of the NTEP Evaluation Checklist in early November 2020. The checklist is undergoing formatting work. In December 2020, a small group began the final comparison review of the checklist contents to the tentative EVSE Code in NIST Handbook 44. Once completed, the checklist will be compared to the California evaluation checklist currently in use to include any additions or corrections learned from their evaluation experience.

At the 2021 NCWM Annual Meeting, NTEP Administrator Darrell Flocken provided an update on the status of the NTEP Evaluation Checklist for the evaluation of charging systems. Mr. Flocken reported that NTEP had received the most recent draft of the checklist from the EVSE Task Group and has finalized the formatting effort to make it align with that of NCWM Publication 14 Checklists for other devices. NTEP's goal is to have a draft Checklist available for NTEP Committee adoption by the Committee's 2021 spring meeting.

OTH-2 I Create a NCWM Publication 14 Category for Software

NOTE: NCWM held the 105th Annual Meeting virtually due to legal restrictions on in-person gatherings related to the COVID-19 pandemic. To streamline the event, the Board of Directors and Committees only presented voting items for open hearings. Therefore, no action was taken on Informational, Assigned or Developing items. The Committee will present those items in open hearings of the 2021 NCWM Interim Meeting.

Source:

NTEP Software Sector

Item Under Consideration:

Create a Publication 14 Software category, which includes requirements, considerations and test procedures common to all software-based devices, including software-only products.

There is no single Publication 14 device category in which to place software-specific requirements, considerations and test procedures. Since most modern measurement devices contain software, to appropriately address any concerns each section of Publication 14 must include all software considerations. Further, each device section has a different governing Sector, which makes the process of change an exercise in convincing each Sector to make needed additions while keeping those additions harmonized across Sectors; an effort that has proven very difficult and time consuming.

Such a software section might include the following:

1. Models to be submitted for evaluation
 - a. What constitutes approved software?
 - i. Measurement and presentation
 - ii. Calculations based on a measured value
 - iii. Manual entry of measured value
 - iv. Other
 - b. Application of software may lead to additional Pub. 14 section consideration
 - c. Minimum computing requirements statement
2. Software Identification
 - a. Appropriate means of 'marking' metrologically significant software
 - b. Software Separation and marking consequences
 - c. Relationship between software and software identifier
 - d. Presentation of software identifier
 - i. Example icons and menu text

- ii. Exceptions
- 3. Protection against unauthorized software change
 - a. How is software "sealed"?
 - b. Remote software update considerations
 - c. Audit trail (if employed) requirements for software updates
- 4. Accuracy of data calculations
 - a. When to stop evaluating calculations & data manipulation
- 5. Software Evaluation Checklist

Future Topics

- 1. Distributed software considerations
 - a. Securing communications between metrologically significant distributed software modules or components of a system

The NTEP Committee reviewed and discussed the proposal from the NTEP Software Sector. The Committee is very interested in this idea but heard no comment during the 2018 Interim Meeting open hearings. During the 2018 Annual Meeting open hearings NTEP Software Sector Chair Pettinato encouraged the Committee to seriously consider and move forward with the proposal. The Sector thinks this would improve the type evaluation process and avoid deviation in language or requirements from Pub 14 section to Pub 14 section. He also pointed out that internationally there is a separate document for software.

During the November 2019 Board of Directors and NTEP Committee Meeting, the NTEP Committee recommended that the Board of Directors approve the proposal giving the Software Sector its own section in Publication 14. The Board of Directors approved this request. The NTEP Administrator will work with the Software Sector to develop this document.

During the open hearings, of the 2020 Interim Meeting, two members raised concerns that if this Sector begins developing software specifications for weighing and measuring instruments, now would the other Sectors, responsible for these instruments, learn of this and would this create confusion among manufacturers, field inspectors and NTEP evaluators. Mr. Flocken explained that the charge of the Software Sector is to develop guidelines and examples of good software development practices such as, but not limited to, 1) software separation to permit software changes of non-metrological functions and features without having an impact to the controlled revision level(s) listed on an NTEP Certificate of Conformance. 2) Software identification and revision control to permit the separate identification of metrological and non-metrological software modules.

Mr. Stephen Benjamin, North Carolina | NTEP Committee Chair
 Mr. Craig VanBuren, Michigan | NCWM Chairman
 Mr. Hal Prince, Florida | NCWM Chairman-Elect
 Mr. Mahesh Albuquerque, Colorado | Member
 Mr. Jack Walsh, Town of Wellesley, Massachusetts | Member
 Mr. Darrell Flocken, NCWM | NTEP Administrator

2020 National Type Evaluation Program Committee

Mr. Craig VanBuren, Michigan | NTEP Committee Chair
 Mr. Hal Prince, Florida | NCWM Chairman
 Mr. Mahesh Albuquerque, Colorado | Member
 Mr. Jack Walsh, Town of Wellesley, Massachusetts | Member
 Mr. Ivan Hankins, Iowa | Member

Mr. Darrell Flocken, NCWM | NTEP Administrator

2021 National Type Evaluation Program Committee

Appendix A

2020 NTEP Statistics Report

(As of June 30, 2020)

General NTEP Statistics	Last Fiscal Year	3 rd Quarter This Year
	10/01/18 – 9/30/19	10/01/19 – 6/30/20
Total Applications Processed	(24) 350	(19) 240
Applications Completed	345	125
New Certificates Issued	316	212
Active NTEP Certificates		2231

Assignments to Labs per Year	10/1/18 – 9/30/19	10/01/19 – 6/30/20
California	29	(2) 24
Canada	2	1
FGIS-IL	0	0
FGIS-KC	12	8
Kansas	3	2
Maryland	7	4
New York	(2) 22	(1) 16
NIST Force Group	2	5
North Carolina	7	(1) 3
Ohio	62	(1) 62
Oregon	1	0
NTEP Staff	80	(4) (3) 115
Applications Not Yet Assigned to a Lab	0	1

() = Reassignments from another lab

Process Statistics	10/2008 - Present
Average Time to Assign an Evaluation	4.2 Days
Average Time to Complete an Evaluation	81.3 Days

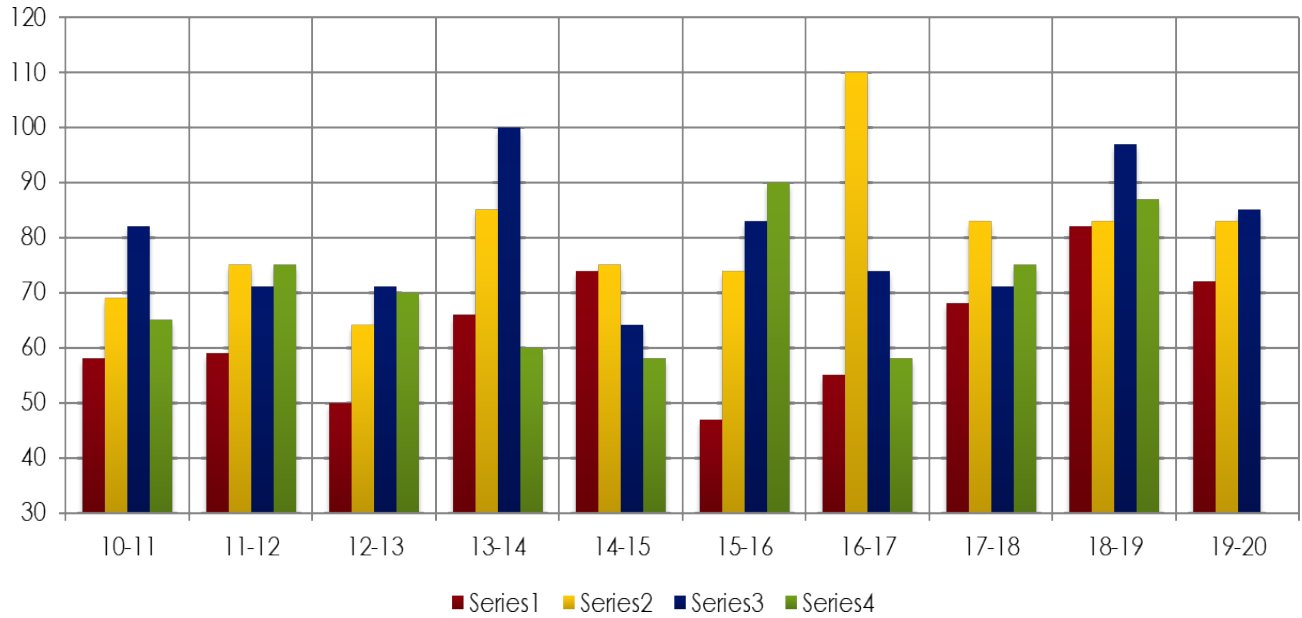
Report on Evaluations in Progress

Evaluations in Progress	0-3 Months	3-6 Months	6-9 Months	9-12 Months	Over 1 Year	Total
June 30, 2016	57	13	7	3	7	84
September 30, 2016	60	31	9	5	7	87
December 22, 2016	34	30	21	6	9	112
March 30, 2017	45	14	6	12	7	100
June 30, 2017	42	27	5	5	11	84
September 30, 2017	32	21	16	4	14	90
December 31, 2017	38	15	15	9	13	90
March 31, 2018	44	15	8	10	12	89
June 30, 2018	55	28	9	4	12	108
September 30, 2018	39	27	14	3	7	90
December 31, 2018	42	17	18	11	8	96
March 15, 2019	36	16	11	13	15	91
June 30, 2019	55	16	6	5	16	98
September 30, 2019	40	23	11	4	11	89
December 31, 2019	35	23	17	6	10	91
February 29, 2020	43	19	16	8	11	97
June 30, 2020	61	28	14	7	11	121

In Progress by Lab	0-3 Months	3-6 Months	6-9 Months	9-12 Months	Over 1 Year	Total
California	7	5	2			14
Canada	1			2		3
FGIS-IL						0
FGIS-KC	9				1	10
Kansas	1	1		1		3
Maryland	1		2	3	2	8
New York	3	5			3	11
NIST Force Group		1	3		1	5
North Carolina						0
Ohio	13	11	7	1	4	36
Oregon						0
NTEP Staff	26	4				30
Unassigned	0	1				1

Total Pending: 121

10-Year Report on Applications Received by Quarter



	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20
Oct – Dec	58	59	50	66	74	47	55	68	82	72
Jan – Mar	69	75	64	85	75	74	110	83	83	83
Apr – Jun	82	71	71	100	64	83	74	71	98	85
Jul - Sep	65	75	70	60	58	90	58	73	87	
Total	274	280	255	311	271	294	297	295	350	240
Average Per Quarter: 10-YR:	73.5									
Average Per Quarter This FY:	79.3									

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2021 NTEP Statistics Report

(As of September 30, 2020)

General NTEP Statistics	Last Fiscal Year	This Year
	10/01/18 – 9/30/19	10/01/19 – 9/30/20
Total Applications Processed	(24) 350	(19) 298
Applications Completed	345	293
New Certificates Issued	316	270
Active NTEP Certificates		2244

() = Reactivations

Assignments to Labs per Year	10/1/18 – 9/30/19	10/01/19 – 9/30/20
California	29	(3) 30
Canada	2	1
FGIS-IL	0	0
FGIS-KC	12	9
Kansas	3	2
Maryland	7	6
New York	(2) 22	(1) 19
NIST Force Group	2	5
North Carolina	7	(1) 6
Ohio	62	(1) 62
Oregon	1	0
NTEP Staff	80	(5) (7) 158
Applications Not Yet Assigned to a Lab	0	1

() = Reassignments from another lab

Process Statistics	10/2008 - Present
Average Time to Assign an Evaluation	4.1 Days
Average Time to Complete an Evaluation	80.8 Days

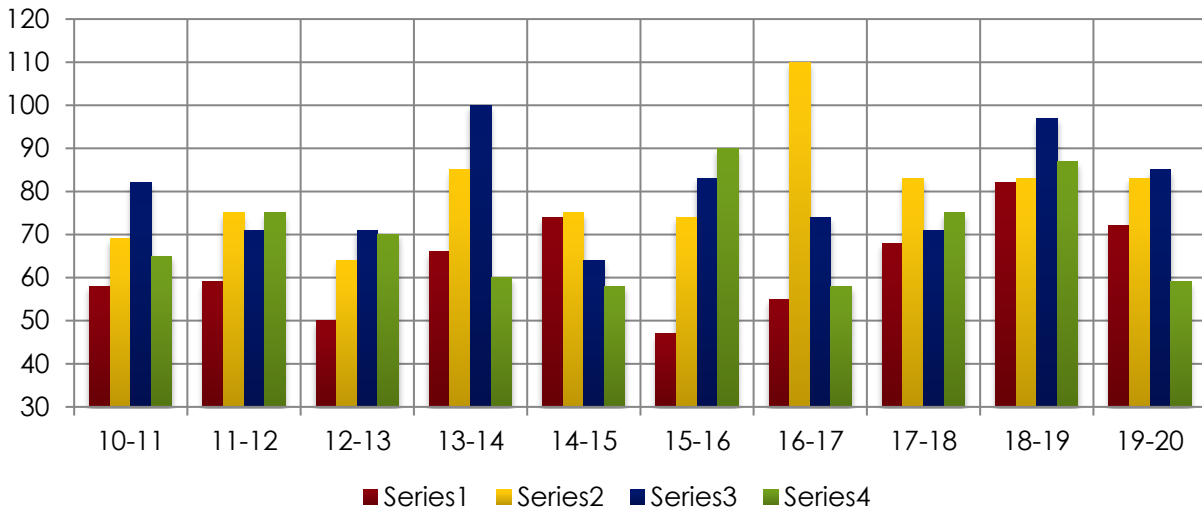
Report on Evaluations in Progress

Evaluations in Progress	0-3 Months	3-6 Months	6-9 Months	9-12 Months	Over 1 Year	Total
September 30, 2016	60	31	9	5	7	87
December 22, 2016	34	30	21	6	9	112
March 30, 2017	45	14	6	12	7	100
June 30, 2017	42	27	5	5	11	84
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June 30, 2019	55	16	6	5	16	98
September 30, 2019	40	23	11	4	11	89
December 31, 2019	35	23	17	6	10	91
February 29, 2020	43	19	16	8	11	97
June 30, 2020	61	28	14	7	11	121
September 30, 2020	36	28	18	8	18	109

In Progress by Lab	0-3 Months	3-6 Months	6-9 Months	9-12 Months	Over 1 Year	Total
California	6	7	4	1		18
Canada		1			2	3
FGIS-IL						0
FGIS-KC		9			2	11
Kansas		1				1
Maryland	2	1		1	5	9
New York	2	1	4		1	8
NIST Force Group				1	1	2
North Carolina	3					3
Ohio	5	6	3	5	3	22
Oregon						0
NTEP Staff	18	2	7		4	31

Unassigned	1
Total Pending: <u>109</u>	

10-Year Report on Applications Received by Quarter



	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19
Oct – Dec	58	59	50	66	74	47	55	68	82	72
Jan – Mar	69	75	64	85	75	74	110	83	83	84
Apr – Jun	82	71	71	100	64	83	74	71	98	85
Jul – Sep	65	75	70	60	58	90	58	73	87	59
Total	274	280	255	311	271	294	297	295	350	300

Average Per Quarter: 10-YR: 73.2

Average Per Quarter This FY: 75.0

Average per Year: 10-YR: 292.7

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Appendix B

National Type Evaluation Program (NTEP) Belt-Conveyor Scale (BCS) Sector Meeting Summary

October 29, 2019
Hyannis, Massachusetts

INTRODUCTION

The charge of the Belt-Conveyor Scale (BCS) Sector is important in providing appropriate type evaluation criteria based on specifications, tolerances and technical requirements of NIST Handbook 44 Sections 1.10. General Code and 2.21. BCS Systems. The Sector's recommendations are presented to the National Type Evaluation Program (NTEP) Committee each January for approval and inclusion in NCWM Publication 14 Technical Policy, Checklists and Test Procedures for national type evaluation.

The Sector is also called upon occasionally for technical expertise in addressing difficult NIST Handbook 44 issues on the agenda of the National Conference on Weights and Measures (NCWM) Specifications and Tolerances Committee. Sector membership includes industry, NTEP laboratory representatives, technical advisors and the NTEP Administrator. Meetings are held annually, or as needed and are open to all NCWM members and other registered parties.

Suggested revisions are shown in **bold face print** by ~~striking out~~ information to be deleted and underlining information to be added. Requirements that are proposed to be nonretroactive are printed in ***bold faced italics***.

Table A
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
BCS	Belt-Conveyor Scale	NTEP	National Type Evaluation Program
MTL	Minimum Test Load	NTETC	National Type Evaluation Technical Committee
MWT	Master Weight Totalizer	OWM	Office of Weights and Measures
NCWM	National Conference on Weights and Measures	USNWG	U.S. National Work Group
NIST	National Institute of Standards and Technology		

I. New Items

A. Changes to NIST Handbook 44 Belt-Conveyor Scale Systems Code:

Source:

NIST Technical Advisor, Mr. John Barton

Proposal:

Develop recommendations for amendments to NCWM Publication 14 to correspond with changes adopted in NIST Handbook 44 at the NCWM Annual Meeting in July 2019.

Background:

During a 2016 meeting of the USNWG on BCS, the USNWG recognized that there has been a difference of opinion in the interpretation of tolerance application among regulatory officials, manufacturers, and users of belt-conveyor scale type systems. The work group confirmed through their discussions that the tolerance prescribed in NIST Handbook 44 Section 2.21. are being applied to the range of test run results by some evaluators as a “plus or minus” tolerance while others are taking a more conservative position and applying the tolerance as an absolute value. This lack of clarity in the Belt-Conveyor Scale Systems Code and the difference in interpretation of how the tolerance is to be applied was identified as a source of inconsistency in the regulation of this type of dynamic weighing systems. Since the USNWG recently amended the Belt-Conveyor Scale Systems Code to recognize systems that operate using multiple rates for the flow of material, this inconsistency was considered to be a significant issue that the work group should address.

The USNWG consulted past records of work group meetings, NTEP Sector meetings, and NCWM conference reports, along with other resources in attempts to determine the correct and intended application of the allowable variation between consecutive test runs when material tests are conducted. The USNWG was unable to arrive at any definitive conclusion on this issue through this research but they agreed it is necessary to amend the Belt-Conveyor Scale Systems Code to clearly identify the proper application of tolerances under specific sets of test conditions.

After lengthy discussion and much deliberation, the USNWG arrived at a consensus and agreed the existing tolerance should be applied as an absolute value when comparing test results performed under practically identical conditions (referring primarily to the flow rate of material). They also concluded that when comparing test results from test 1 runs performed under different conditions, the tolerance should be applied as a plus or minus value to the range of 2 test results.

The changes included in the attached proposal are intended to clarify how the prescribed tolerances are to be applied when comparing totalization operations during material tests on a “belt-conveyor scale system” or a “weigh-belt system.” The recommended changes will specify the application of tolerances when material test runs are performed under practically identical conditions, and the proper application of tolerances when those test runs are performed under different conditions.

During deliberations on the issue of how tolerances are to be applied in a comparison of material test results, the USNWG acknowledged that advances in design and technology have resulted in belt-conveyor scale systems and weigh-belt systems capable of performing within more stringent tolerances. The work group also recognized that the international recommendation OIML (R50) incorporates different accuracy classes for these types of systems. It was also noted NIST Handbook 44 Scales Code (Section 2.20.) incorporates different accuracy classes for weighing devices regulated under that code. The members of the work group agreed there were benefits to introduce different accuracy classes for belt-conveyor scales and weigh-belt systems in NIST Handbook 44 Section 2.21., believing that adding another accuracy class of dynamic weighing systems would provide more alternatives for determining the weight of various products in a wider array of commercial applications.

The additional changes in this proposal recommending the introduction of two different accuracy classes would retain the existing performance requirements (0.25 % relative to the weight of reference material used) and add a second accuracy class for devices/systems capable of complying with more stringent performance requirements

(0.1 % relative to the weight of the reference material). In addition to introducing a new accuracy class with a smaller tolerance, other changes are included in this proposal to accommodate the addition of a second accuracy class. This proposal also recommends changes to account for differences in minimum scale division size, marking requirements, minimum test load size, and requirements pertaining to zero-tests (see attached document). These changes to the U.S. standards will harmonize more closely with international recommendation OIML R50 and bring the Belt-Conveyor Scale Systems Code in alignment with certain requirements in the Scales Code in NIST Handbook 44. There may be opposing arguments from some that do not support allowing a “plus or minus” application of tolerances to the range of results from consecutive material test runs when those runs are performed under different flow rates.

In proportion to the number of these types of systems in commercial use, there are relatively few systems that are installed in a manner with the intent and/or ability to alter the flow rate of material.

Ensuring compliance with the provisions outlined in Section 3.2. in the Fundamental Considerations of NIST Handbook 44 may prove challenging in some installations, depending upon the available equipment for weighing reference materials and conducting the test of the belt-conveyor scale system or weigh-belt system. The USNWG has received information however, from a device manufacturer (and member of the USNWG) that has demonstrated that these requirements are achievable.

In 2019 the NCWM S&T Committee considered a proposal from the USNWG to make multiple changes in the NIST HB 44 Belt-Conveyor Scale Systems Code to address the decisions outlined above. In July 2019, the NCWM voted on and adopted those proposed changes. The NTEP BCS Sector is now being asked to develop recommended changes in NCWM Publication 14 that will align that publication with the adopted changes to NIST HB 44.

Discussion/Conclusions:

Sector members in attendance at the October 29, 2019 meeting were notified that changes being recommended for NCWM Publication 14 were posted on the NCWM’s website approximately two weeks prior to the meeting. Not all members at the Sector meeting had the opportunity to complete a full review of those recommended changes. Those Sector members agreed they would complete their review and provide any comments regarding edits or other changes by Friday, November 1, 2019. Those comments would be provided to NIST Technical Advisor who would then incorporate any necessary changes and forward the amended recommendations to the NTEP Administrator prior to the November 15 deadline. No significant changes were recommended by members attending the October 29, 2019 Sector meeting.

A copy of the proposed changes (identified using Microsoft Word’s “track changes” feature) has also been included as an appendix to this meeting summary.

B. New Test Procedures for Reference Scales

Source:

NIST Technical Advisor, Mr. John Barton

Proposal:

Develop test procedures for use in verification of reference scales used during material tests on Class 0.1 belt-conveyor scales and weight-belt systems. New procedures are necessary to include in NCWM Publication 14 as well as for routine field examinations to certify reference scales that are to be held to a 0.035 % accuracy.

Background:

With the adoption of changes to the NIST HB 44 Belt-Conveyor Scale Systems Code in July 2019, belt-conveyor scales (and weigh-belt systems) will need to be marked with accuracy classes beginning in January 2020. New devices designed to meet the current 0.25 % accuracy requirements will be marked Class 0.25 and devices manufactured to meet the more stringent accuracy requirements (0.1 %) will be marked as Class 0.1. The material tests for those new devices marked Class 0.1 will require reference scales used to weigh the test material that will

meet an accuracy of 0.035 %. The verification of reference scales to an accuracy of 0.035 % will present the evaluators with a number of challenges.

Reference scales will need to precisely weigh the test material needed as the minimum test load (MTL) and as the nominal capacity increases for the belt-conveyor scale under test, so does the amount of material needed for the MTL. In general, smaller capacity scales will be less difficult to certify as accurate than larger capacity scales due to the amount of test weight necessary used to verify reference scales.

In many cases, larger capacity scales used for commercial purposes are not routinely tested to capacity using an amount of test weight equivalent to the scale's capacity since it is less likely that those larger amounts of test weight are: readily available; easily transported; and satisfactorily placed on the load-receiving element. It should be recognized however, that these scales are not held to the level of accuracy required from a reference scale.

The Sector will be asked to consider methods available to certify the accuracy of reference scales. Included below are a few options.

1. Test to capacity (or at least used capacity) using test weights in the amount equal to that capacity.
2. Test to capacity using a lesser amount of test weight but performing either substitution tests or strain-load tests.
3. Use a smaller capacity reference scale tested to capacity using a full complement of test weights but weighing the MTL in multiple drafts.
4. Testing the reference scale as a mass comparator rather than performing a test to certify the scale's full weighing range.
5. Testing the reference scale using error weights or in an expanded resolution mode.

Some of the above examples may only resolve a portion of all the issues involved and may need to be used in conjunction with other methods to complete the task. In addition, most of the examples above will introduce additional uncertainties to the process that will subtract from the tolerance allowed for the reference scale.

Another measure that the Sector may consider as a more practical approach to test the larger capacity, higher accuracy class of belt-conveyor scales would be to reduce the required MTL. The USNWG on BCS and the Sector have discussed this option in previous meetings, noting that under the OIML R50 standard minimum test loads required are smaller. The 2020 edition of NIST Handbook 44 requirements for Class 0.1 belt-conveyor scales will require that the MTL shall not be smaller than the largest value from the following:

- 2000 scale divisions;
- the load obtained during one full revolution of the belt; or
- the load obtained during 10 minutes of operation.

The parameter listed in the third bullet (10 minutes of operation) will typically be the most frequently used value for the required MTL.

Since the reduction in the size of the MTL will generally facilitate a more readily achievable verification of the reference scale, this may be an option that could be submitted as a proposal to change the MTL requirements in NIST HB 44. Comparing NIST HB 44 and OIML R50 requirements, the first two bullets as shown above are shared by both standards. However, the third option in OIML R50 is a MTL of 2 % of the load totalized in one hour at maximum flowrate instead of NIST HB 44's the load obtained in 10 minutes of operation. In most cases, 2 % of the load totalized in one hour of operation would represent a greatly reduced value for the MTL when compared to the 10 minutes of operation currently appearing in HB 44 requirements.

While a reference scale does not need to meet all requirements that a commercial device must comply with its accuracy and repeatability must be established with great precision. Any error observed in the reference scale must be accounted for. If the error cannot be eliminated through adjustments, it must be accounted for when establishing the weight of the reference material used. Errors that are not corrected must be subtracted from the 0.035 % tolerance allowed for the reference scale.

A scale that is incapable of repeating indications for the same test load is not suitable for use as a reference scale. It is recommended that repeatability be established by applying the same test load to the same location on the load-receiving element in a series of consecutive weighments, returning to a zero-balance between each application of the load. Using multiple weighments in this series will produce a more precise value for the standard deviation. Calculating the standard deviation of all weighments made during the repeatability test will be used to establish the uncertainty value attributed to the scale's repeatability. The value of the standard deviation will also be subtracted from the allowable 0.035 % tolerance.

Using the reference scale with its indicated weight in an expanded mode or by using error weights to more precisely determine the weight value of the load applied will help reduce the uncertainty involved in establishing the value of the MTL. Reading the indications using a resolution of 0.1d reduces the effect of rounding by a factor of ten.

There must be an adequate means to account for the added uncertainties introduced through the test procedures used that will reduce the allowance of the relatively small tolerance that a reference scale will be held to when used to test Class 0.1. The following are some examples of uncertainties that will subtract from the total budget for tolerance allowed (0.035 %) for the reference scale.

- Use of test weights will subtract 0.0001 % for each individual test weight used. Class F test weights are calibrated using this tolerance.
- Each individual draft made on the reference scale (when any error in the scale is corrected for) is subject to an uncertainty of 0.5 d due to the rounding of scale indications. As mentioned above, this can be reduced through the use of error weights to determine the change-over points between increments or by placing the scale indicator in an expanded resolution mode.
- Substitution tests will include the total uncertainty value for each substitution operation due to the scales rounding.
- Of course, there are many variables contributing to uncertainty of the weighments that the evaluator is (to some extent) in control of such as:
 - the precision and correct use of test equipment;
 - environmental factors (e.g., wind affecting the scale's operation); and
 - loss or contamination of reference material during transport.

Discussion:

The attendees of the 2019 NTEP BCS Sector meeting were asked to comment on the anticipated challenges associated with conducting material tests on the newly adopted Class 0.1 belt-conveyor scale and the reference scale needed in this procedure. Those members also recognized that the reference scale would need to be capable of weighing material used to a tolerance of 0.035 %.

Several points were agreed to by those attendees of the meeting. Those points included the following.

1. Types of scales used:

- Likely types of scales to be used as reference scales are railway track scales, vehicle scales, and hopper scales;

- The attendees of the meeting agreed that a hopper-type scale system may be the most effective/practicable type of scale to use as a reference scale given that the weight value for material weighed in such a scale is a direct reading of the “net” weight of that material;
 - When railway track scales or vehicle scales are used for reference scales, it is necessary to weigh the empty rail road cars or motor trucks to obtain the tare weight needed to calculate the net weight of material used;
 - Hopper scales may also be installed to deposit material directly on to conveyor belts, reducing some concerns about loss or contamination of that material;
- Another point that all attendees agreed on was that for any types of scale used for this purpose, the scale’s resolution and capacity are also significant concerns when considering their use as reference scales;
 - One large concern is the weighing capacity of the reference scale in relation to the minimum test load needed to conduct a material test. Uncertainty in the determination of the reference material’s weight value can be reduced by reducing the number of draft weighments made by the reference scale needed to complete a totalized weight of the material;
 - Additionally, a relatively large minimum scale division will result in larger rounding errors and the uncertainty attached to the weight value of the reference material can also be reduced by increasing the resolution of the reference scale thereby reducing the effect of any rounding error;
- Another significant concern regarding the reference scale is the location of that scale in relation to the scale under test;
 - Not only is this concern related to the measurable distance between the reference scale and the scale under test, but it also involves the time needed to transport the material from the reference scale to the scale under test;

2. Minimum Test Load Size

The size of the Minimum Test Load (MTL) is a significant consideration since the reference scale will need to be certified as accurate at that weight value;

- The Sector members agreed that the value of the MTL is the minimum value for the used capacity of the reference scale and the reference scale must be certified for use to at least this value;
- The attendees of the Sector meeting also agreed that verification of a relatively smaller MTL would be much less difficult than when a larger MTL is necessary however, large capacity belt-conveyor scales will require large MTLs;
- Also recognized by the attendees of the meeting was that the requirements from OIML R50 (Beltweighers) allow for smaller MTLs as compared with those found in NIST HB 44.
 - R50 includes one of the three parameters for the size of MTL as 2 % of the load totalized in one hour at maximum flowrate and corresponding NIST HB 44 requirement is 10 minutes of operation. In general, the R50 requirement produces in a much smaller MTL;
 - The attendees of the October 29 meeting did not show full support for amending requirements in NIST HB 44 to change the criteria for MTL;

- One question raised during the discussions was if it would be acceptable to draft a requirement that would limit the capacity for any Class 0.1 belt-conveyor scale. The attendees did not believe this should be supported;
- The attendees agreed the intent of NIST Handbook 44 G-UR.4.4. and G-UR.2.3. places a general responsibility of the owner/operator for supplying equipment (i.e., appropriate reference scale), thus the installation of large capacity Class 0.1 belt-conveyor scale systems may be self-limiting;

3. Alignment of NIST HB 44 requirements with OIML R50

The attendees also noted that OIML R50 has already included a Class 0.2 belt-conveyor scale system which is subject to a tolerance of 0.2 % for “in service” testing and a 0.1 % tolerance for “initial verification.” Those in attendance did not have any information about the number of these devices that are now in service or any specific test procedures used for certification of these systems.

4. Possible test procedures

Those present at the meeting were presented with four options for test procedures that may be used to certify reference scales used for Class 0.1 belt-conveyor scales. They are as follows.

- 1) Conduct a test on the reference scale to verify accuracy and repeatability using a full compliment of certified test weights that will be equivalent to at least the used capacity of the reference scale.
 - 2) Perform a test on the reference scale as stated above with a lesser amount of available certified test weight and then complete the certification to used capacity using substitution test.
 - 3) Perform a test on the reference scale as stated above with a lesser amount of available certified test weight and then complete the certification to used capacity using a strain-load test.
 - 4) Perform a test on the reference scale by verifying its repeatability and accuracy at only the weight value(s) associated with the MTL used and not verifying its accuracy at other weight values in the reference scale’s weighing range.
- While there was a general agreement that option number 1 above was preferable, those present at the meeting acknowledged that this option may not always be possible. In recognition of this, one suggestion heard at the meeting was to adopt a HB 44 requirement that would limit the capacity on Class 0.1 belt-conveyor scales. Further discussion on limiting the capacity on Class 0.1 systems reflected a general opposition to doing so.
 - Considering these four options for test procedures, the members attending the meeting considered the possibility of excluding some of the options that will increase the amount of uncertainty in the weighing of the MTL in order to achieve the specified 0.035 % accuracy needed. While all attendees agreed that the material used for material tests must be weighed using very precise methods, the Sector members did not conclude that any of these four methods should be completely eliminated.
 - Another part of the meeting’s discussion related to the size of the capacity of a belt-conveyor scale and the increased difficulty of conducting a test on such a system brought forward the notion that most weigh-belt systems are (in general) of smaller capacities and may not present the level of difficulty that larger capacity belt-conveyor scale systems do.

Conclusions:

As mentioned previously under #2 above, the Sector members attending the October 29, 2019 meeting believe that since there is a responsibility of the owner/operator of the belt-conveyor scale systems to provide an appropriate reference scale, the placement of Class 0.1 systems into commercial service may be limited. The attendees of the meeting agreed that considerations of the belt-conveyor scale’s size/capacity, the capacity,

resolution, and location of a reference scale, and the availability of certified test weights will likely play a role in any decision to install a Class 0.1 device.

Additionally, it was agreed that the location and accessibility of a reference scale for use in material tests of Class 0.1 systems must be controlled with more stringent requirements and the requirements currently in the NIST HB 44 BCS Systems Code were not sufficient. While there was a general reluctance of those attending the meeting to amend the current requirements for the MTL, the Sector members also agreed that reducing the required size of the MTL would align NIST HB 44 requirements more closely with OIML R50 requirements and this point deserves further debate.

The attendees of the Sector meeting agreed that the USNWG on BCS should be contacted and asked to provide their comments on the issues discussed regarding the testing of the new Class 0.1 systems. The attendees also agreed that there should be a continuation of Sector and/or USNWG meetings to resolve the issues outlined above. The NIST Technical Advisor agreed to contact the entire work group via email and ask for their input and to schedule a meeting of the USNWG early in 2020 to address the development of test procedures for Class 0.1 systems and the associated reference scales.

II. Attendance 2019 Meeting:

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Appendix C

National Type Evaluation Program (NTEP) Grain Analyzer Sector Meeting Summary

August 11, 2020
Virtual Meeting

August 10, 2021
Virtual Meeting

INTRODUCTION

The charge of the NTEP Grain Analyzer Sector is important in providing appropriate type evaluation criteria based on specifications, tolerances and technical requirements of NIST Handbook 44 Sections 1.10. General Code, 5.56. Grain Moisture Meters and 5.57. Near-Infrared Grain Analyzers. The sector's recommendations are presented to the National Type Evaluation Program (NTEP) Committee each January for approval and inclusion in NCWM Publication 14 Technical Policy, Checklists, and Test Procedures for national type evaluation.

The sector is also called upon occasionally for technical expertise in addressing difficult NIST Handbook 44 issues on the agenda of National Conference on Weights and Measures (NCWM) Specifications and Tolerances (S&T) Committee. Sector membership includes industry, NTEP laboratory representatives, technical advisors, and the NTEP Administrator. Meetings are held annually, or as needed and are open to all NCWM members and other registered parties.

Proposed revisions to the handbook(s) are shown as follows: 1) deleted language is indicated with a **bold face font using strikeouts** (e.g., ~~this report~~), 2) proposed new language is indicated with an **underscored bold-faced font** (e.g., new items), and 3) nonretroactive items are identified in *italics*. There are instances where the Sector will use **red** text and/or **highlighted** text to bring emphasis to text that requires additional attention. When used in this report, the term "weight" means "mass."

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Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
BIML	International Bureau of Legal Metrology	NTEP Sector	National Type Evaluation Program Sector
CD	Committee Draft	OCP	Ongoing Calibration Program
CIML	International Committee of Legal Metrology	OIML	International Organization of Legal Metrology
CIPM	International Committee of Weights and Measures	OWM	Office of Weights and Measures
D	Document	R	Recommendation
EMRP	European Metrology Research Program	S&T	Specifications and Tolerances
FGIS	Federal Grain Inspection Service	SC	Subcommittee
GA	Grain Analyzer	SD	Secure Digital
GIPSA	Grain Inspection, Packers and Stockyards Administration	TC	Technical Committee
GMM	Grain Moisture Meter	TW	Test Weight
MRA	Mutual Recognition Arrangement	UGMA	Unified Grain Moisture Algorithm
NCWM	National Conference on Weights and Measures	USB	Universal Serial Bus
NIR	Near Infrared Grain Analyzer	USDA	United States Department of Agriculture
NIST	National Institute of Standards and Technology	USNWG	United States National Working Group
NTEP	National Type Evaluation Program		

Details of All Items
(In order by Reference Key)

1. Report on the 2020 and 2021 NCWM Interim and Annual Meetings

The 2020 NCWM Interim Meeting was held January 26 – 29, 2020 in Riverside, California and the 2020 NCWM Annual Meeting and 2021 NCWM Interim Meeting were held in January 2021 in a virtual meeting format. At the NCWM Interim Meeting, there were a total of three recommendations for changes to the NIST HB 44 GMM Code (B1: GMA-18.1, 5.56(a); N.1.1. Air Oven Reference Method Transfer Standards, N.1.3. Meter to Like-Type Meter Method Transfer Standards and 5.56(b) N.1.1. Transfer Standards, T. Tolerances” GMA-19.1 Table T.2.1 Acceptance and Maintenance Tolerances Air Oven method for all Grains and Oil Seeds” GMA-20.1 “S.2.5. Provisions for Sealing.” There were no recommended changes to Publication 14 for grain analyzers. The status of the items following the NCWM Annual Meeting are as follows:

- B1: GMA-18.1, 5.56(a); N.1.1. Air Oven Reference Method Transfer Standards, N.1.3. Meter to Like-Type Meter Method Transfer Standards and 5.56(b) N.1.1. Transfer Standards, T. Tolerances is an assigned item.
- GMA-19.1 Table T.2.1 Acceptance and Maintenance Tolerances Air Oven method for all Grains and Oil Seeds is a developing item.
- GMA-20.1 S.2.5. Provisions for Sealing is a voting item.

The following was reported during the 2020 Grain Analyzer Sector Meeting:

- B1: GMA-18.1, 5.56(a); N.1.1. Air Oven Reference Method Transfer Standards, N.1.3. Meter to Like-Type Meter Method Transfer Standards and 5.56(b) N.1.1. Transfer Standards, T. Tolerances. Ms. Lee reported this item is included in a block of items that was given an assigned status and a work group was assigned.
- GMA-19.1: Table T.2.1 Acceptance and Maintenance Tolerances Air Oven method for all Grains and Oil Seeds. Ms. Lee reported that the S&T committee agreed to a developing status so that the Sector members can review additional data on other grain types to verify that a single tolerance would apply to all grain types. Discussion of this item is included under agenda item 9 of this summary.
- GMA-20.1: S.2.5. Provisions for Sealing. Ms. Lee reported that after a subsequent review by NIST OWM, an error in the Table S.2.5 was created with the adoption of these changes. Discussion of this error and proposed solutions to correct the error are included in the Sector’s discussion of Agenda item 4 of this summary.

During the voting session, item GMA-20.1 was adopted as part of the Specification and Tolerance Committee, Consent Calendar. This vote was ratified during the special voting session held during the 2021 NCWM Annual Meeting. The remaining two items (B1: GMA-18.1, and GMA-19.1 maintained their current status of Assigned and Developing, respectively. See item 4 of this meeting’s agenda for recommended changes to Publication 14 based on the adoption of this item.

Items B1: GMA-18.1 and GMA-19.1 maintained their current status through the 2021 NCWM Interim Meeting and onto the 2021 NCWM Annual Meeting agenda.

At the 2021 NCWM Annual Meeting, held July 18 – 23 in Rochester, New York, there were a total of two recommendations for changes to the NIST HB 44 GMM Code. The two items and their status were:

- B1: GMA-18.1, 5.56(a); N.1.1. Air Oven Reference Method Transfer Standards, N.1.3. Meter to Like-Type Meter Method Transfer Standards and 5.56(b) N.1.1. Transfer Standards, T. Tolerances is an assigned item.
- GMA-19.1 Table T.2.1 Acceptance and Maintenance Tolerances Air Oven method for all Grains and Oil Seeds is a developing item.

Discussion:

Mr. Darrell Flocken (NTEP Administrator) provided an update on the proposal on the NCWM, Specifications and Tolerances Committee, related Grain Analyzers. During the 2020 and 2021 NCWM Annual Meetings, the members adopted the proposal to change the sealing requirements to require all instruments to have a Category 3, audit trail sealing device. Additional action on this topic is defined in Item 4 of this agenda.

2. Report on NTEP Evaluations and Ongoing Calibration Program (OCP) (Phase II) Testing

Mr. Jason Jordan (Grain Inspection, Packers and Stockyards Administration (GIPSA)), the NTEP Participating Laboratory for grain analyzers, provided a list of grain analyzers that were enrolled in the 2019 Ongoing Calibration Program (OCP); there are 8 grain analyzer models enrolled.

The eight models:

1. Dickey-john Corp. – GAC2500-UGMA
2. Dickey-john Corp. – GAC2000, GAC2100, GAC2100a and GAC2100b
3. Perten Instruments Inc. - AM5200 and AM5200-A (UGMA)
4. Perten Instruments Inc. – IM9500 and IM9500 HLW/TW
5. Foss North America – Infratec 1241
6. Foss North America – Infratec Nova
7. The Steinlite Corp. – SL95
8. MTC Moisture Analyzers – MTC 999 ES

Mr. Jordan provided the Sector with an update on NTEP Phase II ongoing calibration program evaluations and reported that the same 8 models are in the 2020 Ongoing Calibration program. Mr. Jordan reported that there are two devices in phase 1 testing that will not be included in phase II testing this year.

Mr. Jordan provided a list of grain analyzers that were enrolled in the 2021 Ongoing Calibration Program (OCP); there are 7 grain analyzer models enrolled.

The 7 models:

1. Dickey-john Corp. – GAC2500-UGMA
2. Dickey-john Corp. – GAC2000, GAC2100, GAC2100a and GAC2100b
3. Perten Instruments Inc. - AM5200 and AM5200-A (UGMA)
4. Perten Instruments Inc. – IM9500 and IM9500 HLW/TW
5. Foss North America – Infratec 1241
6. Foss North America – Infratec Nova
7. The Steinlite Corp. – SL95

Mr. Jordan confirmed the participation of the instruments listed above as being enrolled in the Ongoing Calibration Program, under Phase II testing. He also reported that the MTC Moisture Analyzers, model MTC 999 ES has been removed from the list and will not be participating in the program.

Mr. Jordan also reported that there is currently one device in phase I testing. This device will move into the phase II testing later this year.

3. Review of OCP (Phase II) Performance Data for Moisture and Test Weight per Bushel

At the Sector's August 2005 meeting it was agreed that comparative OCP data identifying the Official Meter and listing the average bias for each NTEP meter type should be available for annual review by the sector. Accordingly, Mr. Jordan will provide data for inclusion in the 2019 Grain Analyzer Sector Meeting Agenda showing the performance of NTEP meters compared to the air oven. This data is based on the last three crop years (2017–2019) using calibrations updated for use during the 2019 harvest season.

At the Sector's August 2012 meeting, it was agreed that TW comparison and correlation charts should be prepared for the 3 grains which are most likely to be subject to discounts on the basis of TW: Corn and two wheat classes and limited to Air Oven reference values less than 20% moisture. The wheat classes selected were: Hard Red Winter and Soft Red Winter. Accordingly, Mr. Jordan will provide data showing the performance of NTEP meters compared to the GIPSA reference Quart Kettle Test Weight Apparatus. This data is based on the last three crop years (2017 – 2019) using calibrations updated for use during the 2018 harvest season.

The 2017-2020 Grain Moisture Meter (GMM) Phase II comparison graphs are available for viewing or can be downloaded for printing from the NTEP Grain Analyzer Sector page, 2020 and 2021 Meetings on the NCWM website at www.ncwm.com/grain-sector.

Mr. Jordan provided the sector with an update on the OCP (Phase II) performance data for moisture and test weight per bushel for the 2017-2020 crop years and reviewed the comparison graphs. The Sector members provided no additional comments.

4. Adding a Nonretroactive Requirement to NIST HB44 Grain Moisture Meter Code 5.56(a) that Grain Moisture Meters meet Category 3 Sealing Requirements

Source:

Grain Analyzer Sector

Purpose:

At the 2016 Grain Analyzer Sector Meeting, during its discussion of Agenda Item 4 Address Devices and Systems Adjusted Using a Removable Digital Storage Device (S&T Developing Item B7: Gen-2 and B7: GMM-2) previously titled "Modify the Definition of Remote Configuration Capability" that is defined in Appendix D of NIST Handbook 44 to Recognize the Expanded Scope of "Remote Configuration Capability" (S&T Developing item 3600-5)" on the GA Sector Meeting Agenda, it was noted that the current technology for sealing grain moisture meters are with event loggers (category 3 sealing requirements). Due to the complexity of these devices, a Category 3 sealing provides a record of what calibration and configuration parameters were changed. As such, the GA Sector discussed including a non-retroactive requirement for category 3 sealing for all grain moisture meters. Currently NIST HB 44 NIR code for devices that measure protein, oil and starch requires that the device be sealed with an event logger. These meters also measure moisture and currently meet category 3 requirements.

Item Under Consideration:

The GA Sector's Technical Advisor included the following proposal for changes to the Grain Analyzer Code 5.56(a) in the 2016 Grain Analyzer Sector Summary for review:

S.2.5. Provision for Sealing.

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S.2.5.3. *An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants.)*

A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to 25 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)

[Nonretroactive as of January 1, 20XX]

(Amended 20XX)

Mr. Doug Musick (Kansas Weights and Measures), submitted the following alternate proposal:

Table S.2.5. Categories of Device and Methods of Sealing	
Categories of Device	Methods of Sealing
Category 1¹: <i>No remote configuration capability.</i>	<i>Seal by physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.</i>
Category 2¹: <i>Remote configuration capability, but access is controlled by physical hardware.</i> <i>A device shall clearly indicate that it is in the remote configuration mode and shall not be capable of operating in the measure mode while enabled for remote configuration.</i>	<i>The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.</i>
Category 3²: <i>Remote <u>and/or no remote configuration</u> capability access. Access may be unlimited or controlled through a software switch (e.g., password). When accessed for modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not can operate in the measuring mode.</i>	<i>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants). A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to 25 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</i>
Category 3a: <i>No remote capability, but operator is able to make changes that affect the metrological</i>	Same as Category 3

integrity of the device (e.g., slope, bias, etc.) in normal operation.	
*When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.	
Category 3b: No remote capability, but access to metrological parameters is controlled through a software switch (e.g., password).	Same as Category 3
*When accessed for modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.	
¹ <u>Not allowed for devices manufactured on or after January 1, 2019</u>	
² <u>Required for all devices manufactured on or after January 1, 2019</u>	

[Nonretroactive as of January 1, 1999]

[*Nonretroactive as of January 1, 2014]

(Amended 1998, ~~and~~ 2013 and XXXX)

Background/Discussion:

During discussion of Agenda Item 4 above during the 2016 GA Sector meeting, it was suggested that the Grain Moisture Meter Code requirements for sealing be changed such that all grain moisture meters are required to meet category 3 sealing requirements as of a specific date; e.g. all grain moisture meters must have an event logger. With the increase in ease of switching out removable SD cards and making changes to metrological components it may be time to require a form of sealing that provides information on what was changed and the date of the change to the device. Category 3 sealing is currently required in NIST HB 44, Section 5.57, NIR Code. Manufacturers that were present at the meeting did not object to the proposal, but it was noted that all manufacturers were not represented at the meeting. During the 2016 GA sector meeting, Jim Truex also noted that we may need to consider State laws that require that a commercial device have a lead and wire seal. It was also mentioned that the proposed NIST, LMDP language for the general code would be redundant for the devices manufactured on or after the non-retroactive date because these meters will also require an event logger.

The current status for sealing methods of grain moisture meters are as follows:

Inactive Certificates of Conformance (CC):

- 9 inactive certificates; an inactive status for grain analyzers means that a CC was previously active for a device, but now the device is no longer being manufactured or remanufactured. Existing devices may be used, sold, or repaired and resold under inactive certificates. As such, these devices are likely still in use.
 - 3 inactive devices are *not* sealed using an event logger.

Active CC

- 9 active certificates
 - 1 active device is *not* sealed using an event logger.

2017 Grain Analyzer Sector Meeting:

During the 2017 GA Sector Meeting, the Sector members reviewed the proposed changes and provide comments and discussion on the proposed language for changes to the sealing requirements in NIST HB 44, Section 5.56(a). During the discussion States participants noted that they would rather have an event logger as it provides more information than a lead and wire seal and noted that when seals are removed no information is available to determine what changes were made to the grain moisture meter and agreed that the Category 3 method of sealing provides much more information to determine the changes made to the device. Some discussion was held on implementation with some older meters still having Category 1 sealing while others new devices would have Category 3 devices. Karl Cunningham mentioned that Illinois has a similar situation with NTEP and Non-NTEP meters in use in their State. Since as noted above currently, one active meter is not sealed using an event logger, the Sector recommended that additional work is needed to talk about impact of this requirement on manufacturers and to get additional feedback on an appropriate non-retroactive date for this proposed change.

2018 Grain Analyzer Sector Meeting:

During the 2018 GA Sector Meeting the Sector reviewed two proposal to require that all Grain Analyzers meet the category 3 sealing requirements. The first proposal was to make a change to the Paragraph S.2.5 similar to the paragraph in the NIR code. The second proposal was to make changes to table S.2.5. The Sector chose the second proposal. This proposal makes it easier for transitioning to the new nonretroactive requirements that grain analyzers meet category 3 sealing requirements.

The GA Sector reviewed a form 15 develop by Mr. Musick agreed to the following proposed changes to NIST HB 44 Section 5.56(a) Table S.2.5.

<p align="center">Table S.2.5. Categories of Device and Methods of Sealing</p>	
Categories of Device	Methods of Sealing
<p>Category 1¹: <i>No remote configuration capability.</i></p>	<p><i>Seal by physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.</i></p>
<p>Category 2¹: <i>Remote configuration capability, but access is controlled by physical hardware.</i></p> <p><i>A device shall clearly indicate that it is in the remote configuration mode and shall not be capable of operating in the measure mode while enabled for remote configuration.</i></p>	<p><i>The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.</i></p>
<p>Category 3²: <i>Remote Configuration capability access may be unlimited or controlled through a software switch (e.g., password).</i></p> <p><i>When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</i></p>	<p><i>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants). A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to 25 times the number of sealable parameters in the device, but not more than 1000 records are</i></p>

	<i>required. (Note: Does not require 1000 changes to be stored for each parameter.)</i>
Category 3a: No remote capability, but operator is able to make changes that affect the metrological integrity of the device (e.g., slope, bias, etc.) in normal operation.	Same as Category 3
*When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.	
Category 3b: No remote capability, but access to metrological parameters is controlled through a software switch (e.g., password).	Same as Category 3
*When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.	
¹ Not allowed for devices manufactured on or after January 1, 20XX	
² Required for all devices manufactured on or after January 1, 20XX	

[Nonretroactive as of January 1, 20XX]

~~[*Nonretroactive as of January 1, 2014]~~

(Amended 1998, ~~and~~ 2013 ~~and~~ 20XX)

Following the 2018 GA Sector meeting, NIST OWM reviewed the proposal put forward by the Grain Analyzer Sector for changes to HB 44, GMM Code Table S.2.5 and provided an alternate proposal in the NIST OWM analysis of the 2019 S&T Interim meeting agenda. The NIST OWM alternate proposal provided two paragraphs that addressed sealing for devices manufactured between 1999 and 2020 and sealing for devices manufactured on or after 2020 believing it would provide clarity for when to apply the requirements. The NIST OWM proposal was not considered at the 2019 Interim Meeting and was not accepted at the 2019 Annual meeting. The Sector's proposal was adopted at the 2019 annual meeting with a change to the non-retroactive date of January 1, 2019 to January 1, 2020 and will appear in the 2020 NIST HB 44. As such, changes to NCWM Publication 14 GMM checklist are also needed to correctly reflect the changes to NIST HB 44. At its 2019 GA Sector Meeting, the sector reviewed the proposed changes to Publication 14 and agreed with the following change as follows:

Proposal to amend GMM Publication 14 Appendix C, Page GMM-37

Table S.2.5. Categories of Device and Methods of Sealing	
Categories of Device	Method of Sealing
Category 1 [±] : No remote configuration capability	Seal by physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999.) If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.

<p>Category 2¹: Remote configuration capability, but access is controlled by physical hardware.</p> <p>Device shall clearly indicate that it is in the remote configuration mode and shall not be capable of operating in the measure mode while enabled for remote configuration.</p>	<p>The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters; one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999.) If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.</p>
<p>Category 3²: Remote configuration capability, access may be unlimited or controlled through a software switch (e.g. password.)</p> <p>When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measure mode.</p>	<p>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants.) A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to twenty-five (25) times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</p>
<p>Category 3a: No remote capability, but operator is able to make changes that affect the metrological integrity of the device (e.g. slope, bias, etc.) in normal operation.</p> <p>When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measure mode.</p>	<p>Same as Category 3</p>
<p>Category 3b: No remote capability, but access to metrological parameters is controlled through a software switch (e.g. password.)</p> <p>When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measure mode.</p>	<p>Same as Category 3</p>
<p>¹ Not allowed for devices manufactured on or after January 1, 2020</p> <p>² Required for all devices manufactured on or after January 1, 2020</p>	

Non-retroactive as of January 1, ~~1999~~ 2020.

(Amended 1998, 2013, and 2019)

2019 Grain Analyzer Sector Meeting:

Ms. Diane Lee (NIST, OWM) reported during the 2019 GA Sector Meeting, that after review of the changes made to NIST HB 44, GMM Code 5.56(a) Table S.2.5 during the 2019 NCWM Annual Meeting, NIST OWM identified an error with the change. With the removal of previous non-retroactive dates and the addition of a January 1, 2020 non-retroactive date along with the addition of two footnotes added to the table (1) Not allowed for devices manufactured on or after January 1, 2020 and (2) Required for all devices manufactured on or after January 1, 2020 the NIST HB 44 requirement now only applies to devices as of January 1, 2020 and no longer address devices in service prior to this date. Ms. Lee noted changes are needed to correct this error in the 2020 version of NIST HB 44.

Ms. Lee also reported during the 2019 GA sector meeting NIST provided alternative language during the 2019 NCWM Interim and Annual meetings that may have provided clarity and that this proposed language is currently used in HB 44 in other codes, but was not accepted by the S&T committee. Mr. Darrell Flocken reported that the NIST proposal matched what was done in the scales code.

Ms. Lee asked if a change to NCWM Publication 14 could be delayed because there is a known error in the 2020 NIST HB 44 adopted language. Mr. Darrell Flocken (NTEP Administrator) stated that with the approved change to the 2020 version of NIST HB 44, the change should be made to the 2020 version of NCWM Publication 14. Then corrections should be made to both HB 44 and Publication 14 for the 2021 publications to correct the error.

The GA Sector members, during the 2019 GA Sector meeting discussed suggested changes to correct the error in NIST the 2020 HB 44. Mr. Flocken suggested the removal of the retroactive date in the proposal making the entire table retroactive and applying to all devices and keeping the notes as an explanation of when devices will need to meet category 3 sealing requirements. The Sectors considered the proposal and agreed with Mr. Flocken's proposed changes to correct the error in the 2020 version of NIST HB 44 which follows:

Table S.2.5. Categories of Device and Methods of Sealing	
Categories of Device	Method of Sealing
Category 1 ¹ : No remote configuration capability	Seal by physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999.) If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.
Category 2 ¹ : Remote configuration capability, but access is controlled by physical hardware. Device shall clearly indicate that it is in the remote configuration mode and shall not be capable of operating in the measure mode while enabled for remote configuration.	The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters; one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999.) If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.
Category 3 ² : Remote configuration capability, access may be unlimited or controlled through a software switch (e.g. password.) When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measure mode.	An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants.) A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to twenty-five (25) times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)
¹ Not allowed for devices manufactured on or after January 1, 2020 ² Required for all devices manufactured on or after January 1, 2020	

~~Non-retroactive as of January 1, 2020.~~

(Amended 1998, 2013, 2019, **and 2020**)

The Sector requested that the NIST Technical Advisor further review the proposal with others within NIST and following no additional concerns, to submit a draft Form 15 for changes to the 2021 GMM Code Table S.2.5 to the GA sector for approval by ballot and upon approval forward the form 15 to the NCWM so that it may be forward to some of the regional weights and measures for review. It was noted that the current deadline would have required immediate Sector balloting and responses, but Mr. Flocken pointed out that the deadline for Sector proposed changes to NIST HB 44 is still November 1.

2020 Grain Analyzer Sector Meeting:

Ms. Lee reported that after review of the changes made to NIST HB 44, GMM Code 5.56(a) Table S.2.5 during the 2019 NCWM Annual Meeting, NIST OWM identified an error with the change. With the removal of previous non-retroactive dates and the addition of a January 1, 2020 non-retroactive date along with the addition of two footnotes added to the table (1) Not allowed for devices manufactured on or after January 1, 2020 and (2) Required for all devices manufactured on or after January 1, 2020 the HB 44 requirement now only applies to devices as of January 1, 2020 and no longer address devices in service prior to this date. Ms. Lee noted changes are needed to correct this error in the 2020 version of NIST HB 44.

Ms. Lee shared a marked up copy identifying the proposed changes and asked the members present for comments. After a brief discussion, it was agreed that the changes were appropriate and should be presented to the S&T Committee for consideration at the 2020 NCWM Annual Meeting. Since the items status is voting, Mr. Loren Minnich (S&T Committee Chair) requested that a copy of the modified proposal be supplied to the S&T Committee before their conference call tentatively scheduled for the end of August. Ms. Lee also requested that Mr. Flocken email a copy of the modified proposal to all Sector members. (A copy was emailed on August 12, 2020.) In addition, a copy of the modified proposal can be viewed or downloaded for printing from the NTEP Grain Analyzer Sector page, 2020 Meeting on the NCWM website at www.ncwm.com/grain-sector and is shown below. (Proposed changes are highlighted in yellow.)

2021 Grain Analyzer Sector Meeting:

Ms. Lee reviewed the adopted change to the sealing requirements in NIST Handbook 44 and presented a proposed change to Publication 14. No comments or suggested changes were heard. The members agreed to modify Publication 14 as stated.

GMA-20.1 V S.2.5. Provisions for Sealing.

Source:

NTEP Grain Analyzer Sector

Purpose:

Correct an error caused by a 2019 amendment that inadvertently removed applicability of the provisions in Table S.2.5. for any devices manufactured prior to 2020.

Item Under Consideration:

Amend NIST Handbook 44, Grain Moisture Meter Code 5.56 (a) as follows:

S.2.5. Provision for Sealing. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

~~Provision shall be made for applying a~~ **An approved means of security shall be provided seal in a manner that requires the security seal to be broken, or for using other approved means of providing security (e.g., audit trail available at the time of inspection** as defined in ~~paragraphs~~**Table S.2.5.1 S.2.5. Sealing Requirements for Devices Manufactured Between January 1, 1999 and January 1, 2020** ~~Categories of Device and Methods of~~ **and S.2.5.2 S.2.5.1. Sealing Requirements for Devices Manufactured on or after January 1, 2020**) before any change that affects the metrological integrity of the device can be made to any mechanism.

(Amended 2019 ~~and 2020~~**1**)

S.2.5.1. Sealing Requirements for Devices Manufactured Between January 1, 1999 and January 1, 2020¹. The appropriate sealing requirements in Table S.2.5.1. shall apply.

<u>Table S.2.5.1. Table S.2.5</u> <u>Categories of Device and Methods of Sealing</u> <u>For Devices Manufactured Between January 1, 1999 and January 1, 2020</u>	
<i>Categories of Device</i>	<i>Methods of Sealing</i>
<i>Category 1¹: No remote configuration capability.</i>	<i>Seal by physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.</i>
<i>Category 2¹: Remote configuration capability, but access is controlled by physical hardware.</i> <i>A device shall clearly indicate that it is in the remote configuration mode and shall not be capable of operating in the measure mode while enabled for remote configuration.</i>	<i>The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.</i>
<i>Category 3²: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</i> <i>When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</i>	<i>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants). A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to 25 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</i>
<i>Category 3a: No remote capability, but operator is able to make changes that affect the metrological integrity of the device (e.g., slope, bias, etc.) in normal operation.</i> <i>*When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</i>	<i>Same as Category 3</i>
<i>Category 3b: No remote capability, but access to metrological parameters is controlled through a software switch (e.g., password).</i> <i>*When accessed for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.</i>	<i>Same as Category 3</i>
¹ Not allowed for devices manufactured on or after January 1, 2020 ² Required for all devices manufactured on or after January 1, 2020	

[Nonretroactive as of January 1, ~~2020~~ 1999]
[*Nonretroactive as of January 1, 2014]
(Amended 1998, 2013, ~~and~~ 2019, 2020)

Note: Zero-setting and test point adjustments are considered to affect metrological characteristics and must be sealed.

(Added 1993) (Amended 1995 and 1997)

S.2.5.21. Sealing Requirements for Devices Manufactured on or after January 1, 2020. – An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants.)

A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to 25 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)

5. Report on International Organization of Legal Metrology (OIML) TC 17/SC 1 R 59 *Moisture Meters for Cereal Grains and Oilseeds*

Background / Discussion:

This item is included on the Sector's agenda to provide a summary of the activities of OIML TC17/SC1 to the grain analyzer sector and to those Sector members that participate on the United States National Working Group (USNWG) on grain moisture meters.

OIML TC17/SC1 was tasked to revise OIML R 59 *Moisture Meters for Cereal Grains and Oilseeds* to reflect new technologies and actual grain analysis. The Co-Secretariats (China and the United States) worked closely with an International Project Group to revise OIML Recommendation R 59 *Moisture Meters for Cereal Grains and Oilseeds*.

As reported at the 2016 GA Sector meeting, OIML R59 would be voted on at the 51st CIML Meeting. OIML R 59 *Moisture Meters for Cereal Grains and Oilseeds* was approved at the 51st CIML meeting, held October 17-21, 2016.

Grain moisture meter manufacturers were notified by e-mail on May 9, 2017 that OIML R59 2016 was published and available on the OIML website at www.oiml.org/en/files/pdf_r/r059-p-e16.pdf. In this e-mail NIST OWM requested any feedback or statement on how this standard impacts your company that can be used in NIST highlights to demonstrate the impact of our work in OIML. If you have not provided a statement or feedback please send this information to diane.lee@nist.gov.

During the 2017 GA Sector meeting, the Sector members were reminded that OIML R59 2016 was revised and published and available on the OIML web site and that the requirements include many U.S. requirements for evaluating grain moisture meters making it easier for U.S. manufacturers to meet the global regulations and metrological controls set for these devices. Sector manufacturers were reminded to provide any feedback on how the Standard impacts their company. For example, providing feedback on experiences with the use of the international standard.

During the 2018 GA Sector meeting manufacturers were asked to report on any impact from the use of this international standard. During the sector meeting, there were no reports on impact due to the use of OIML R59. It was reported that Mexico is looking into adopting requirements in R59.

During the 2019 GA Sector meeting, meter manufacturers were asked to report on any impact from the use of this international standard. Ms. Rachel Beiswenger (TSI, Inc.) reported that some countries are adopting the OIML standards directly as their country requirements. She report that Mexico has adopted OIML requirements. Mr. Larry Speaks (Perten Instruments) reported some countries do not accept U.S. requirements and some added their own requirements. Mr. Flocken provided an update on the OIML type evaluation activities. Mr. Flocken reported the

change from Mutual Acceptance Agreements to OIML Certification Systems. Mr. Flocken mentioned that information is located on the OIML website. Ms. Beiswenger and Mr. Speaks commented that they must get certified by each country, but it helps that the device passes in the U.S. Ms. Lee reported the OIML standards are up for review every 5 years.

During the 2020 GA Sector meeting, Ms. Lee reported that R 59 *Moisture Meters for Cereal Grains and Oilseeds* will up for its 5 year review in 2021. The U.S. and China are co-secretariats of the recommendation.

6. Implementation of NIR Phase 2, Ongoing Calibration Program

Source:

Mr. Jason Jordan, NTEP Grain Analyzer Lab

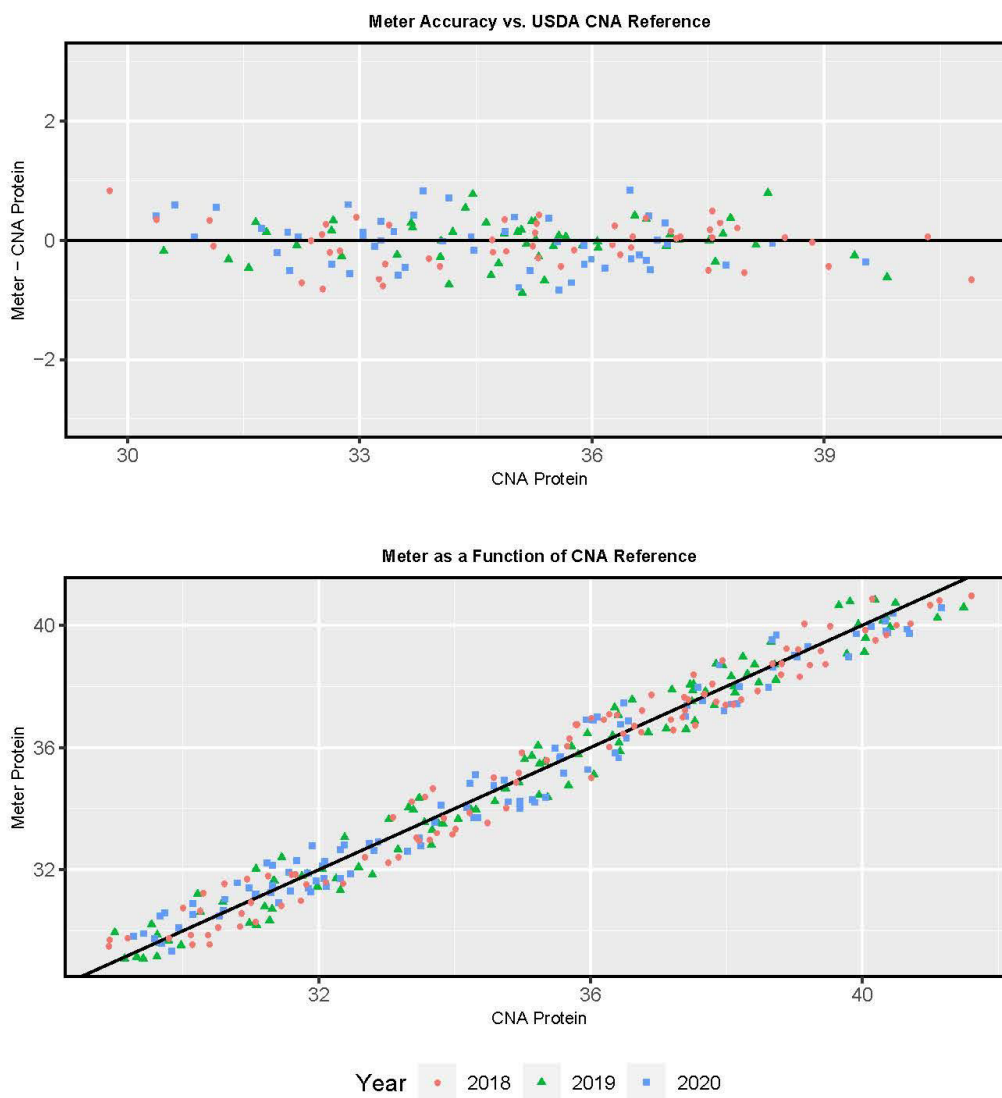
Purpose:

The NTEP Grain Analyzer Lab at FGIS will begin implementation of the NIR Phase 2 Ongoing Calibration Program in 2022. FGIS is seeking to keep participating manufacturers apprised of the evaluation process as it develops to ensure there is mutual agreement and understanding regarding the requirements for compliance.

Proposal:

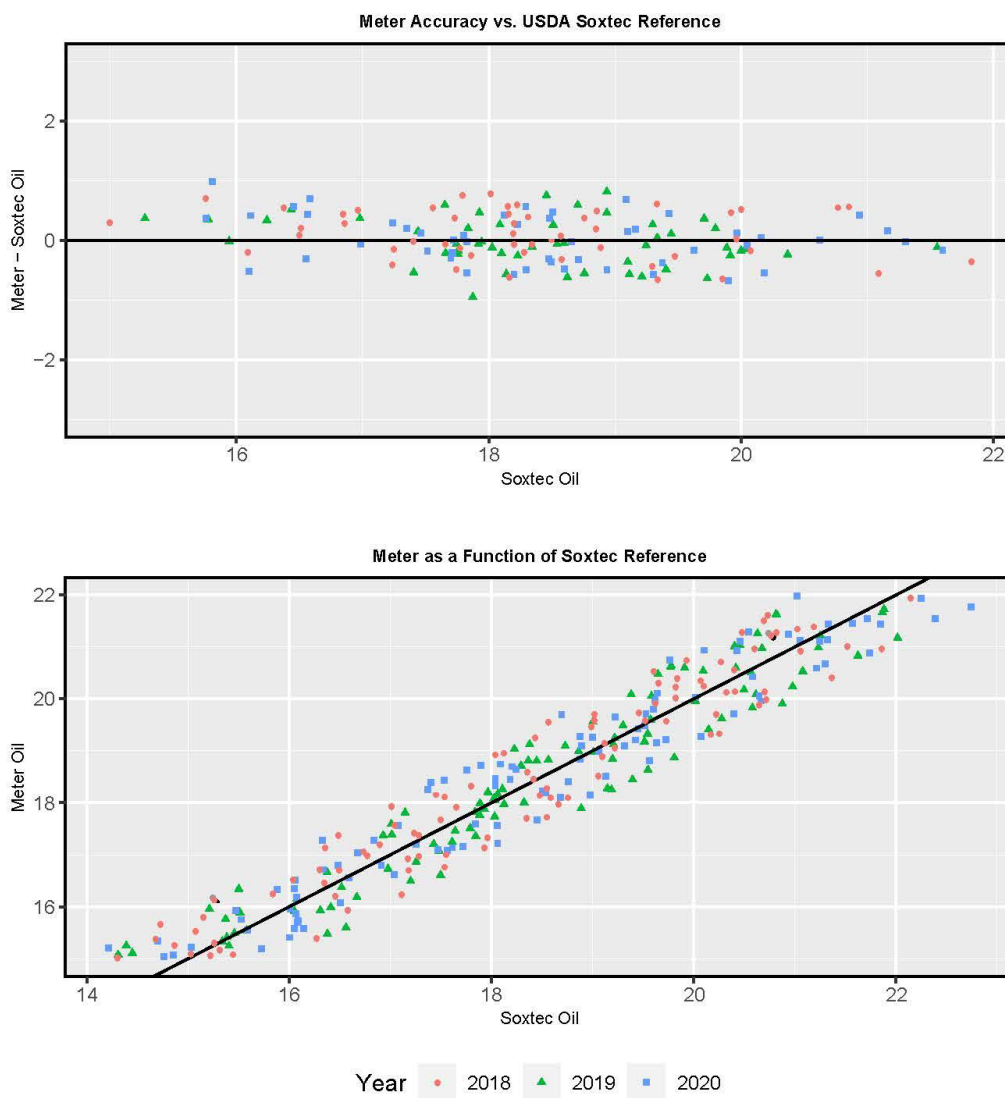
Similar to the Moisture Phase 2 program, the NIR Phase 2 will submit reports to manufacturers to demonstrate performance. Example reports for several grain types and constituents are shown in the following pages. These items, along with any additional items regarding the Phase 2 program, will be open for discussion.

2020 NIR Calibration Study – Soybeans Protein
2018, 2019, 2020 Crop Years
InstA (Calibration)
07/13/2021



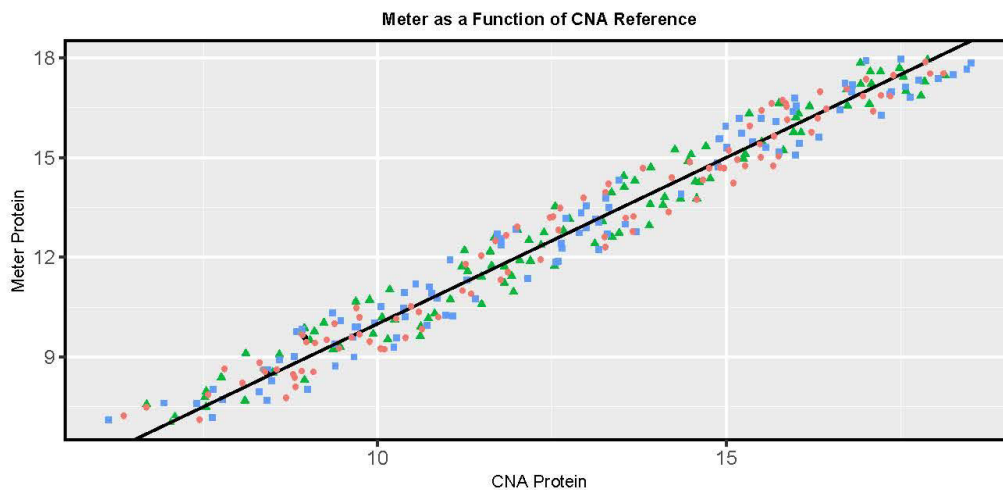
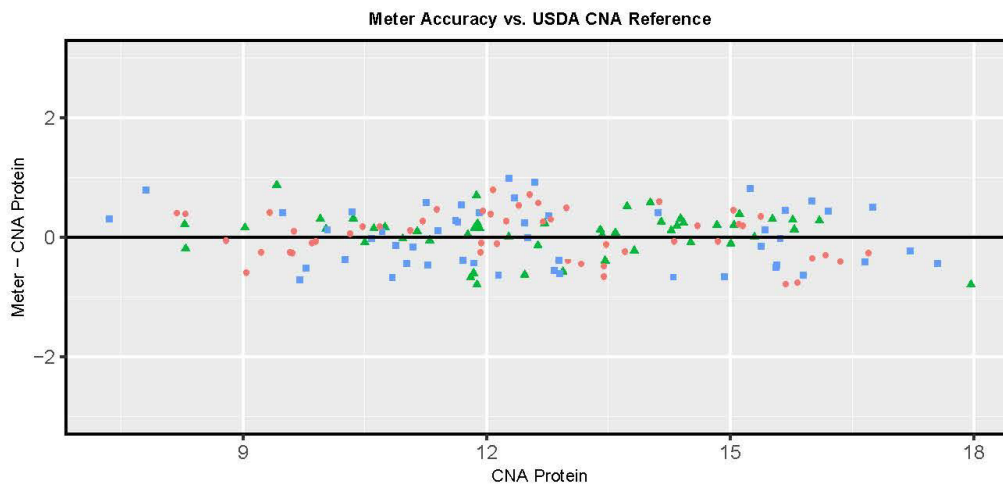
	2018	2019	2020	All Years	Tolerance	Status
<i>Samples</i>	50.00	50.00	50.00	150.00		
<i>Bias</i>	-0.06	-0.01	-0.04	-0.04	0.33	Pass
<i>SEP</i>	0.58	0.58	0.58	0.58	0.55	Fail
<i>Reproducibility</i>	4.51	5.45	5.12	5.01		

2020 NIR Calibration Study – Soybeans Oil
2018, 2019, 2020 Crop Years
InstA (Calibration)
07/13/2021



	2018	2019	2020	All Years	Tolerance	Status
<i>Samples</i>	50.00	50.00	50.00	150.00		
<i>Bias</i>	0.10	-0.02	0.01	0.03	0.27	Pass
<i>SEP</i>	0.55	0.55	0.55	0.55	0.45	Fail
<i>Reproducibility</i>	2.76	2.82	2.66	2.75		

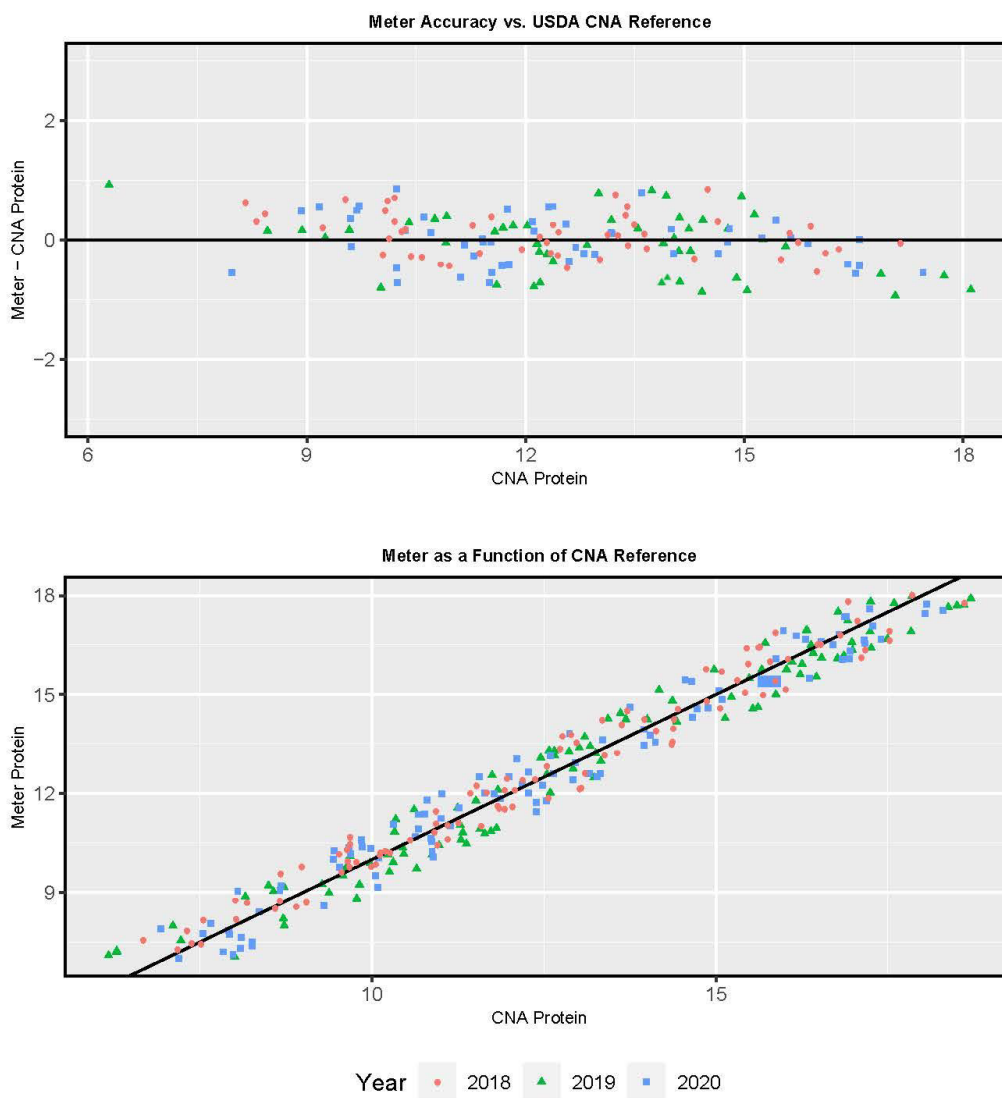
2020 NIR Calibration Study – Six-Row Barley Protein
2018, 2019, 2020 Crop Years
InstA (Calibration)
07/13/2021



Year ● 2018 ▲ 2019 ■ 2020

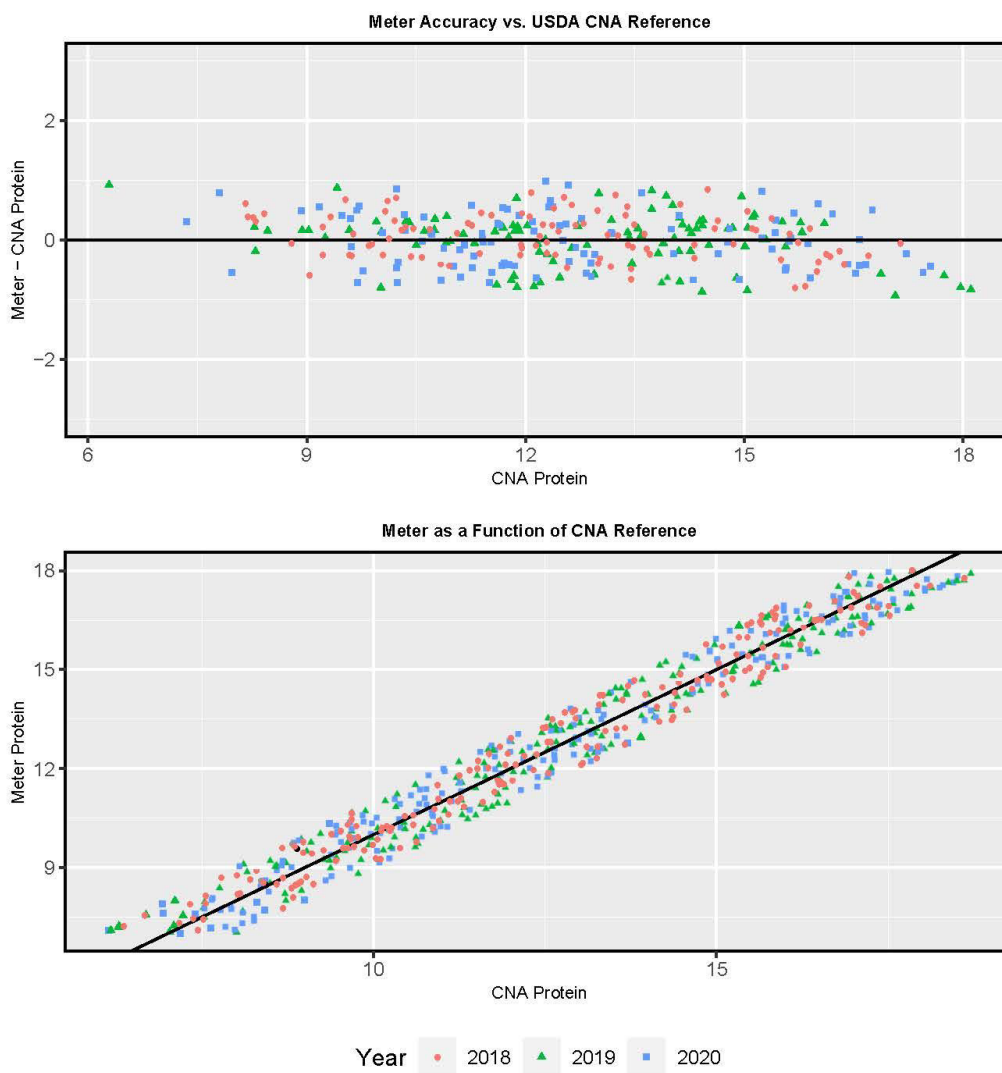
	2018	2019	2020	All Years	Tolerance	Status
<i>Samples</i>	50.00	50.00	50.00	150.00		
<i>Bias</i>	0.02	0.06	0.00	0.03	0.24	Pass
<i>SEP</i>	0.59	0.59	0.59	0.58	0.4	Fail
<i>Reproducibility</i>	4.26	4.26	3.94	4.16		

2020 NIR Calibration Study – Two-Row Barley Protein
2018, 2019, 2020 Crop Years
InstA (Calibration)
07/13/2021



	2018	2019	2020	All Years	Tolerance	Status
<i>Samples</i>	50.00	50.00	50.00	150.00		
<i>Bias</i>	0.07	-0.07	-0.01	0.00	0.24	Pass
<i>SEP</i>	0.58	0.58	0.58	0.58	0.4	Fail
<i>Reproducibility</i>	3.72	4.49	4.18	4.18		

2020 NIR Calibration Study – All Barley Protein
2018, 2019, 2020 Crop Years
InstA (Calibration)
07/13/2021



	2018	2019	2020	All Years	Tolerance	Status
<i>Samples</i>	100.00	100.00	100.00	300.00		
<i>Bias</i>	0.05	-0.01	0.00	0.01	0.24	Pass
<i>SEP</i>	0.58	0.58	0.58	0.58	0.4	Fail
<i>Reproducibility</i>	4.12	4.37	4.04	4.17		

Discussion:

At the 2020 Annual Meeting, Mr. Jason Jordan reviewed the above reporting examples for several grain types and constituents for reporting the performance of NIR instruments under the proposed Phase II program. The Phase II Program for NIR instruments will begin in 2022.

It was discussed and agreed that the current NTEP Application for GMA, Phase II will be revised to add the required information to permit a single application for both instrument types. Mr. Darrell Flocken (NTEP Administrator) agreed to work with Mr. Jordan to develop the single application.

7. Report on International Organization of Legal Metrology (OIML) TC 17/SC 1 R 59 *Moisture Meters for Cereal Grains and Oilseeds*

Background / Discussion:

This item is included on the Sector's agenda to provide a summary of the activities of OIML TC17/SC1 to the grain analyzer sector and to those Sector members that participate on the United States National Working Group (USNWG) on grain moisture meters.

OIML TC17/SC1 was tasked to revise OIML R 59 *Moisture Meters for Cereal Grains and Oilseeds* to reflect new technologies and actual grain analysis. The Co-Secretariats (China and the United States) worked closely with an International Project Group to revise OIML Recommendation R 59 *Moisture Meters for Cereal Grains and Oilseeds*.

As reported at the 2016 GA Sector meeting, OIML R59 would be voted on at the 51st CIML Meeting. OIML R 59 *Moisture Meters for Cereal Grains and Oilseeds* was approved at the 51st CIML meeting, held October 17-21, 2016. Grain moisture meter manufacturers were notified by e-mail on May 9, 2017 that OIML R59 2016 was published and available on the OIML website at https://www.oiml.org/en/files/pdf_r/r059-p-e16.pdf. In this e-mail NIST OWM requested any feedback or statement on how this standard impacts your company that can be used in NIST highlights to demonstrate the impact of our work in OIML. If you have not provided a statement or feedback please send this information to diane.lee@nist.gov.

During the 2017 GA Sector meeting, the Sector members were reminded that OIML R59 2016 was revised and published and available on the OIML website and that the requirements include many U.S. requirements for evaluating grain moisture meters making it easier for U.S. manufacturers to meet the global regulations and metrological controls set for these devices. Sector manufacturers were reminded to provide any feedback on how the Standard impacts their company. For example, providing feedback on experiences with the use of the international standard.

During the 2018 GA Sector meeting manufacturers were asked to report on any impact from the use of this international standard. During the sector meeting, there were no reports on impact due to the use of OIML R59. It was reported that Mexico is looking into adopting requirements in R59.

During the 2019 GA Sector meeting, meter manufacturers were asked to report on any impact from the use of this international standard. Ms. Rachel Beiswenger (TSI, Inc.) reported that some countries are adopting the OIML standards directly as their country requirements. Ms. Beiswenger reported that Mexico has adopted OIML requirements. Mr. Larry Speaks (Perten Instruments) reported some countries do not accept U.S. requirements and some added their own requirements. Mr. Darrell Flocken provided an update on the OIML type evaluation activities. Mr. Flocken reported the change from Mutual Acceptance Agreements to OIML Certification Systems. Mr. Flocken mentioned that information is located on the OIML website. Ms. Beiswenger (TSI, Inc) and Mr. Speaks (Perten Instruments) commented that they must get certified by each country, but it helps that the device passes in the U.S. Ms. Diane Lee (NIST, OWM) reported the OIML standards are up for review every 5 years.

During the 2020 GA Sector meeting, Ms. Lee reported that R 59 *Moisture Meters for Cereal Grains and Oilseeds* will be up for its 5 year review in 2021. The U.S. and China are co-secretariats of the recommendation.

During the 2021 GA Sector meeting Ms. Diana Lee (NIST OWM) provided an update on the activity related to the

update of OIML R 59 *Moisture Meters for Cereal Grains and Oilseeds*.

8. Report on OIML TC 17/SC 8 *Protein Measuring Instruments for Cereal Grains and Oil Seeds*

Background / Discussion:

This item is included on the sector's agenda to provide a summary of the activities of OIML TC 17/SC 8 to the grain analyzer sector and to those Sector members that participate on the United States National Working Group (USNWG) on grain protein measuring instruments.

OIML TC17/SC8 was formed to study the issues and to develop a Recommendation on *Protein Measuring Instruments for Cereal Grain and Oil Seeds* (OIML R 146). Australia is the Secretariat for this subcommittee.

As reported at the 2016 GA Sector meeting, OIML R 146 would be voted on at the 51st CIML Meeting. OIML R 146 *Protein Measuring Instruments for Cereal Grain and Oil Seeds* was approved at the CIML meeting, held October 17-21, 2016.

Grain moisture meter manufacturers were notified by e-mail on May 9, 2017 that OIML R146 *Protein Measuring Instruments for Cereal Grain and Oil Seeds* was published and available on the OIML website at www.oiml.org/en/files/pdf_r/r146-p-e16.pdf. In this e-mail, NIST OWM requested any feedback or statement on how this standard impacts your company that can be used in NIST highlights to demonstrate the impact of our work in OIML. If you have not provided a statement or feedback please send this information to diane.lee@nist.gov.

During the 2017 GA Sector meeting, the Sector members were reminded that OIML R146 2016 was published and available on the OIML web site and that the requirements include many U.S. requirements for evaluating grain protein analyzers making it easier for U.S. manufacturers to meet the global regulations and metrological controls set for these devices. Sector members were reminded to provide any feedback on how the OIML Recommendation impacts their company. For example, providing feedback on experiences with the use of the international standard.

During the 2018 GA Sector meeting manufacturers were asked to report on any impact from the use of this international standard. During the sector meeting, there were no reports on impact due to the use of OIML R146.

During the 2019 GA Sector, meter manufacturers provided reports on any impact from the use of this international standard. See comments to Agenda Item 6 of this summary.

During the 2020 GA Sector meeting, Ms. Lee reported that R 146 *Protein Measuring Instruments for Cereal Grains and Oilseeds* will up for its 5 year review in 2021. Australia is the secretariat of the recommendation.

During the 2021 GA Sector Meeting, Ms. Lee reported on the activity related to the revision of the OIML R 146 *Protein Measuring Instruments for Cereal Grains and Oilseeds*. Anyone interested in receiving updates or participating in the work group activities of this update should contact Ms. Lee.

9. Air-Oven Grain Moisture Proficiency/Collaborative Study/Interlaboratory Comparison Testing

Source:

Grain Analyzer Sector

Purpose:

Develop an air-oven proficiency/collaborative study/interlaboratory comparison testing program to ensure state laboratory and manufacturer's air-oven measurements are traceable to the official USDA, GIPSA air-oven measurements.

Item Under Consideration:

Establish a timeline for consistent and periodic grain moisture proficiency testing.

Background/Discussion:

Under the NTEP program for grain moisture meters, calibrations are based on USDA/GIPSA air ovens while field inspection is based on State air ovens. For the program to be effective, procedures must be in place to assure that State oven results (and manufacturers' oven results) agree with the USDA/GIPSA air oven, which is, considered the standard. NIST, OWM's laboratory measurement traceability program requires that State Weights and Measures laboratories participate in interlaboratory and other collaborative experiments. State Weights and Measures programs with grain moisture laboratories typically meet this requirement by one of two methods: 1) laboratories independently send samples to GIPSA for air oven analysis, and subsequently compare their results to those obtained by GIPSA; or 2) a structured collaborative study where every laboratory, including GIPSA, measure the same sample. A structured collaborative study has at least two advantages over independent submission of samples to GIPSA by individual laboratories: 1) in addition to a check against the "standard", it provides information on how individual labs compare with each other; 2) it allows GIPSA to plan for a known workload.

A collaborative air oven study has been conducted with States and meter manufacturers periodically over a number of years and results discussed during the GA Sector meetings. These studies were conducted in 1995, 2001 and 2015.

At the 2009 NTETC Grain Analyzer Sector Meeting, Dr. Hurburgh (Iowa State University) urged the representatives from the American Oil Chemists Society (AOCS) to prepare a proposal so that the collaborative (air-oven) study could be conducted on an on-going basis rather than on an ad hoc basis. He cautioned that the proposal would have to include corn and wheat as well as soybeans and at the 2011 NTETC Grain Analyzer Sector Meeting, Ms. Johnson, (AOCS) proposed an air-oven/GMM proficiency testing series designed specifically to address the needs of GMM manufacturers and states maintaining a grain moisture laboratory. The intent was for the AOCS to administer, oversee distribution of samples, compile results, perform statistical analysis of results, and distribute a report to participants. AOCS does not collect the samples. This is subcontracted to suitable providers. AOCS does not have laboratories. Since GIPSA/ FGIS is a certified laboratory already participating in the AOCS Soybean Quality Traits program, GIPSA air-oven results could be reported for comparison

At the Sector's August 2012 meeting the sector learned that Ms. Christine Atkinson will be taking over the Proficiency Testing program for States and interested manufacturers formerly headed by Ms. Johnson. Ms. Atkinson verified that participant's cost will remain \$100 per year. The Sector reiterated that the program should focus solely on the standard FGIS air-oven method. Instrument results will not be reported. Participants' air-oven results will be compared against GIPSA's standard FGIS air-oven results. In response to Ms. Atkinson's question about scheduling, the sector was in general agreement that samples should ship after harvest, preferably between mid-January and mid-February with participants' results due 30 days after the shipping date.

The sector agreed upon the following Program Details:

Samples – Soybeans 2, Corn 2, Hard Red Winter Wheat 2

- Cost to Participants - \$100.00/year
- Schedule:
 - Samples (6) ship between January 15 and February 15.
 - Samples must be tested within 5 business days of receipt with results due 30 days after the shipping date.
- Reports to be posted on www.SoybeanQualityTraits.org by 1 May.
- Only the GIPSA oven results will be identified. Individual manufacturer's and State participant's oven results will be assigned an identifier known only to the manufacturer or State participant. Instrument results will not be reported.
- Detailed Participant Instructions will be provided to each participant.

At the August 2013 Grain Analyzer Sector meeting, no report was provided on AOAC's efforts to conduct proficiency testing for grain moisture. As such, Mr. Karl Cunningham (Illinois) and Mr. Kevin Hanson (Missouri) agreed to work

together to conduct a grain moisture proficiency test. Mr. Cunningham agreed to provide the samples for proficiency testing and Mr. Hanson agreed to analyze the data in accordance with the procedures used to conduct proficiency testing in the State laboratory program. Mr. Hanson also agreed to collect data on test weight per bushel which may be useful in field test procedures for evaluating test weight per bushel on instruments. Following the August 2013 Sector meeting arrangements were made for shipping grain samples to State participants.

At the August 2014 Grain Analyzer Sector meeting, Mr. Cunningham provide an update on the status of proficiency testing. Mr. Cunningham informed the Grain Analyzer Sector that he collected some wheat grain samples that can be used for grain moisture proficiency testing and that corn and soybeans will be collected during the 2014 harvest. Mr. Cunningham noted that after January 2015 wheat, corn and soybeans grain samples may be ready for distribution to the participating States. Mr. Cunningham agreed to analyze the data in cooperation with NIST and requested a list of contact information for participating States and other interested parties. Proficiency testing was conducted in 2015 and reported in the 2015 Grain Analyzer Sector Report (Note: In 2015, a Grain Analyzer Sector meeting was not held but a report of activities was generated)

Although the Sector has periodically conducted proficiency testing over the years, a schedule of ongoing proficiency testing is needed to ensure that these tests are performed on a consistent basis. With changes in responsibilities in AOAC and loss connections, establishing an ongoing collaborative study with AOAC may be difficult to manage. As such the Grain Analyzer Sector is asked to consider the following timeline previously discussed for sending out samples and using the guidelines for proficiency testing which includes frequency of testing included in NISTIR 7082 “Proficiency Test Policy and Plan (For State Weights and Measures Laboratories), and tools and forms for analyzing the results which are located on the NIST OWM website at www.nist.gov/sites/default/files/documents/2017/05/09/nistir-7082.pdf

It is suggested that the proficiency testing be managed, and oversight provided by State Weights and Measures, Grain Analyzer Sector members on a rotating basis. Per NISTIR 7082, the frequency of proficiency testing for grain moisture air oven measurements is 4 years or more often. As such the following scheduled is proposed for discussion. Please note that in addition to testing corn, soybeans and wheat the sector is asked to consider any benefits to including one specialty grain such as corn modified for high ethanol production to the proficiency testing. The schedule will be reviewed at the Sector meeting preceding the scheduled proficiency test date to confirm responsible parties and any specialty grains for inclusion in the proficiency test year. The specialty grain will change based on specific market concerns during the proficiency test year.

Air Oven Grain Moisture Proficiency Testing Schedule (Previous PTs 1995, 2001 and 2015)					
PT TestDate 4 yr. Cycle	Sample Collection Date	Samples for Testing 2 of each (corn, wheat, soybeans)	Sample Ship Date	Responsible for Sample Distribution w/ Instructions	Responsible for Data Collection and Analysis
Spr 2019	Spr 2018	✓	Jan/Feb 2019	IL	IL
Spr 2023	Spr 2022	✓	Jan/Feb 2023	_____?	_____?
Spr 2027	Spr 2026	✓	Jan/Feb 2027	_____?	_____?

During the 2017 GA Sector meeting, the Sector agreed that there was no need to test specialty grain and that including these grains will not provide any useful information. The Sector decided that the three major grains, wheat, corn, and soybeans would be the grains included for proficiency testing. States and industry sector members participating in the proficiency testing were encouraged to provide their current contact information to Mr. Cunningham for sample distribution. The above table represent the schedule for proficiency testing which was edited after the 2017 Sector meeting discussion of this item.

During the 2018 GA Sector meeting, Mr. Cunningham report on the Grain Analyzer Sector's 2018 grain moisture proficiency testing activities. He noted that States are required to participate in proficiency testing and that any manufacturer may participate. Mr. Cunningham stated that round robins/proficiency testing will begin shortly after January 1, 2019 and that samples of corn, wheat and soybeans will be sent to participants.

At the 2019 GA Sector Meeting, Mr. Cunningham provided an update of the proficiency testing activities and data collected. Mr. Cunningham reported that the government shutdown caused a delay in obtaining sample references from the AMS, FGIS. Mr. Cunningham stated that he hopes to have sample this year for the round robin.

At the 2020 GA Sector meeting, Mr. Karl Cunningham commented that this effort did not get completed last year. Mr. Cunningham hoped that this could be completed in 2021 and the plan is to send samples out to laboratories using air ovens.

At the 2021 MA Sector Meeting, Mr. Cunningham commented that due to the pandemic no action was taken on this project. Mr. Cunningham did report that action will be restarted this year with information to report back to the sector members. It was stated that for accurate results state air ovens should have correlation to the standards oven at the UDA Laboratory. This was mentioned as the round robin testing previously coordinated by NIST, has been stopped.

10. Phase II Program for Near Infrared Grain (NIR) Analyzers

Source:

Dr. Hurburgh, Iowa State University

Background/Discussion:

The GIPSA Grain Inspection Advisory Committee recommends that GIPSA initiate research to determine the feasibility of extending the theory of "equivalency" to multiple-constituent instruments to utilize standardized technology while maintaining accuracy and consistency in measurement of wheat protein.

Ms. Eigenmann, now a former member of the GA Sector, provided an update on the Grain Inspection Advisory Committee's Resolutions. After which, the Sector discuss the feasibility of an ongoing calibration program also referred to as a Phase II program for Near Infrared Grain Analyzers (NIR) instruments that measure wheat protein. The Phase II program for grain moisture is a program that monitors the moisture calibrations on grain moisture meters annually. As changes to the calibrations occur due to grains, climate, etc., data collected in this program allows for changes to moisture calibrations annually and ensure equivalency among the different moisture meter models. The Advisory committee is recommending that this program be extended to include NIR instruments that measure wheat protein. It was noted that there could be multiple NIR instruments for wheat protein introduced into the market and that it may be advisable to have the Phase II program extended to NIR instruments that measure wheat protein. It was also mentioned that currently there are few States that are checking wheat protein on multi-constituent instruments.

GIPSA currently has an annual review program for the official protein system but would have to consider the cost associated with extending the program for other NIR wheat protein analyzers. It was noted during the discussion that GIPSA currently has hourly rate fees set that could be applied to a phase II program for wheat program.

Unlike moisture where there may be changes to the calibrations annually, there will not be year to year changes for wheat protein. As such, consideration may be given to conducting the program less than annually, and considering reviewing wheat protein calibrations every 3, 4, or 5 years, as appropriate. In addition, it was noted that there also has to be a mechanism to get manufacturers calibration data for calibration review.

The sector discussed the feasibility of a phase II program for wheat protein giving consideration to the following issues:

- How the program will be funded,
- How often the calibrations for wheat protein will be updated,
- How many devices are currently being used in commercial transactions, and

- If being used commercially in a State, what is needed by States to begin testing these devices?

2014 Grain Analyzer Sector Report:

At the August 2014 Grain Analyzer Sector meeting, USDA, GIPSA representatives provided an update on the activities concerning a phase II program for wheat protein. The Sector was informed that USDA, GIPSA is discussing funding options for this program. It was noted that the frequency of calibration for wheat protein is being considered and that this will impact the cost of the program. The Sector was also informed that Dr. David Funk is writing a discussion paper that will address many of the issues concerning a Phase II program for wheat protein.

2015 Grain Analyzer Sector Report:

USDA, GIPSA representatives mentioned that they are not aware of a discussion paper from Mr. Funk concerning the feasibility of a Phase II program for Near Infrared Grain Analyzers. The sector should continue to provide feedback on the four bullet items listed above and USDA, GIPSA should provide any updates on any internal discussions.

2016 Grain Analyzer Sector Meeting:

Mr. Jordan (GIPSA, the NTEP Participating Laboratory) for grain analyzers provided information on some work involving applying data transforms to spectra of multiple instrument models and provided an update of these activities along with others involved in considering Phase II testing for Near Infrared Grain Analyzers.

During the 2016 Grain Analyzer Sector meeting, the sector agreed that a program is needed based on observations and some feedback from sector members that review calibration data for these instruments. As such, the sector “brainstormed” ideas on what would be needed to develop a phase II program to periodically verify the calibrations on Near Infrared devices. The Sector members generated the following information based on its discussion:

Near Infrared Phase II Program Needs:

- Set of robust samples that can be used every year,
- A reference laboratory to perform the testing,
- 100 samples for all meters or less per grain type on each meter,
- The program should verify calibrations for basic grains where there is a commercially impact to included protein in wheat, soybeans, barley, and corn and oil in corn and soybeans (it was noted during discussion that there is a large economic impact in the area of wheat protein and that protein and oil in corn and soybeans are used in many non-trade applications).
- The program would currently include a total number of three instruments (There are three instruments that measure protein and oil in the NTEP program)
- Testing should include a slope bias test for each 2 point intervals and include a confidence interval.
- The current NCWM, Inc policies for participating in the grain moisture phase II testing can be used for the near infrared phase II program.
- An estimate of the cost of the program is needed. There was also a question as to whether or not the cost of the program would be distributed among the participating manufacturers, similar to the Phase II program for grain moisture.

In addition to the discussion of program needs for Phase II testing for near infrared devices, it was noted that although States test near infrared devices for grain moisture measurements, not many States are evaluating these devices for protein or other grain constituents (oil or starch). The GA Sector also discussed the needs of State weights and measures jurisdictions in testing near infrared devices for protein, starch and oil. It was noted that State resources: staff and money are needed for testing and that currently, per the States that attended the Sector meeting, commercial transactions involving protein measurements are lower than for grain moisture measurements.

2017 Grain Analyzer Sector Meeting:

During the 2017 Grain Analyzer Sector meeting, the Sector discussed the cost of an ongoing calibration program (Phase II Testing) for near infrared grain analyzers. Dr. Charlie Hurburgh mentioned that he is aware of continuity problems with protein and oil calibrations. It was mentioned that funding the moisture Phase II testing is handled through the interagency agreement where NIST, GIPSA, and Manufacturers contribute to funding the program. It was noted that the largest cost will be the labor in collecting the instrument data. It was reported that 50 samples are used in the official system for near infrared meters and a monitoring system is also in place for the official system that is similar to that of the Phase II program for moisture. Dr. Hurburgh agreed to develop a Near Infrared Phase II Testing program cost analysis and share it with Ms. Cathy Brenner, USDA, GIPSA. Ms. Brenner agreed to review the cost analysis and write a proposed program for a phase II Near Infrared testing program. This information will be available for review at the 2018 Grain Analyzer Sector meeting.

For the 2018 Grain Analyzer Sector, FGIS prepared a cost estimate for an on-going calibration program for near infrared (NIR) grain analyzers which is based on collecting 50 samples per grain type for a total of 500 samples. The cost estimates are for the additional work above the cost FGIS incurs to maintain the official inspection system. For some of the grains, such as barley and corn, FGIS does not routinely select 50 samples per year for reference analysis due to the narrow constituent range and/or low volume of samples received for the FGIS NIR quality control program. Therefore, FGIS will need to select additional samples to achieve 50 per year that require reference analysis. FGIS will share 50 % of the cost associated with preparing the additional samples for reference analysis and for the reference costs.

The estimate fees for an ongoing NIR calibration program are included in the table below. These fees are based on the FGIS Directive 9180.74 dated January 18, 2018 fee schedule of \$83.90 hourly rate, \$13 for reference moisture, \$20 for reference oil, and \$16 for reference protein.

The estimates are based on the current funding outlook for FGIS. Ms. Cathy Brenner reviewed the cost analysis with the GA sector and Dr. Hurburgh noted that this is being driven by the market and that we should push forward on this effort.

Total NIR Models (including official model) =TM	Number of NTEP only models =N	Total Program Cost =TP	Mfg's Cost Per Model =TP/TM
3	1	\$ 6,137	\$ 2,046
4	2	\$ 12,274	\$ 3,069
5	3	\$ 18,411	\$ 3,682
6	4	\$ 24,548	\$ 4,091
7	5	\$ 30,686	\$ 4,384
8	6	\$ 36,823	\$ 4,603
9	7	\$ 42,960	\$ 4,773
10	8	\$ 49,097	\$ 4,910

2018 Grain Analyzer Sector Meeting:

At the 2018 GA Sector meeting, the Sector was in agreement with establishing a Phase II ongoing calibration for NIR grain analyzers. It was recognized that testing requirements and changes to Publication 14 are needed.

2019 Grain Analyzer Sector Meeting:

During the 2019 Grain Analyzer Sector Meeting, Ms. Cathy Brenner (AMS, FGIS) provided for discussion purposed a table that summarizes slope and bias errors for discussion and a proposal for changes to NCWM Publication 14:

Previous discussions by the Sector for a proposed Phase II or Ongoing Calibration Program for Near Infrared Grain analyzers focused on the estimated cost of a program but did not include proposed tolerances and criteria for the calibration performance.

The guidelines of the American Association of Cereal Chemist International (AACC) Method 39-01.01 Evaluation of NIR Instrument Calibration and Statistical Process Control were applied to a common set of data obtained from at Iowa State University (ISU) as part of the 2016 FGIS NIR Equivalency Study. AACC Method 39-01 evaluates the slope and bias of a calibration compared to the reference method at the 95% confidence level. In addition, statistical process control (SPC) and assessment of measurement uncertainty for the combined reference method, repeatability and reproducibility were applied to this data set (Uc)and expanded uncertainty (U).

The FGIS NIR Equivalency Study included the three NTEP approved NIR models and calibrations. Five units of each model were used to collect three replicates per sample of barley, corn, soybean, and wheat. The data included reference results of each sample. The data was analyzed in groups of up to 50 samples to represent a single year of the NIR Phase II program.

For discussion purposes, the following table summarizes the slope errors of each method that indicated when the slope exceeded a statistical tolerance. It also includes the ISU guidelines and previous guidelines used by FGIS.					
Grain/Constituent	AACC Method		SPC	FGIS	ISU
Barley/Protein	-0.092	0.048	±0.05	n/a	n/a
Corn Oil	-0.014	0.026	±0.094	±0.03	±0.05
Corn Protein	-0.021	0.023	±0.06	±0.03	±0.05
Soybean Oil	-0.026	n/a	±0.032	±0.03	±0.05
Soybean Protein	-0.034	0.042	±0.036	±0.03	±0.05
Wheat Protein	-0.021	0.018	±0.022	±0.02	n/a

For discussion purposes, the following table summarizes the bias errors for each method that indicated when the bias exceeded a statistical tolerance. FGIS typically does not adjust for biases within ±0.10% as these differences can easily vary year to year.					
Grain/Constituent	AACC Method		SPC	Uc	U
Barley/Protein	n/a	n/a	±0.11	0.23	0.47
Corn Oil	-0.09	0.12	±0.34	0.19	0.38
Corn Protein	-0.07	0.06	±0.26	0.21	0.42
Soybean Oil	-0.06	0.02	±0.20	0.17	0.34
Soybean Protein	-0.03	0.01	±0.38	0.34	0.38
Wheat Protein	-0.04	0.10	±0.10	0.23	0.45

Listed below are the proposed changes to the NIR Section of Publication 14 Grain Moisture Meters and Near Infrared Grain Analyzers

IV. Tolerances for Calibration Performance

Calibration performance must be tested against established criteria at the following stages of the type evaluation process:

1. Evaluation of the calibration data supplied by the manufacturer with the application for type evaluation.
2. Evaluating instrument and calibration performance for corn oil and protein; durum wheat protein; hard white wheat protein; hard red spring wheat protein; hard red winter wheat protein; six row barley protein; soft red winter wheat protein; soft white wheat protein; soybeans protein and oil; and two row barley protein (accuracy test discussed earlier).
3. Review of ongoing calibration data collected as part of the national calibration program (Phase II).

In order for a calibration to remain on the certificate of conformance, the calibration must continue to meet tolerances for the initial evaluation's Accuracy Standard Error of Performance (SEP) test. The latest three years of data will be used to make decisions regarding the need to make a calibration update.

Whenever a calibration update is made, the manufacturer shall re-predict protein and/or oil values using the three most recent years of available raw data collected by the Type Evaluation Laboratory.

Updated calibrations will be approved based upon the re-predicted protein and/or oil values. Tolerances will be the accuracy tolerance found in Table 2

Additionally, all calibrations must meet the following requirements for up to three years of available data:

- a. The difference between the average bias to applicable FGIS reference methods for all samples calculated using the most recent calibration and all available raw data collected within the last 3 years shall not exceed: 0.20 for barley protein, corn oil, soybeans oil, and wheat protein; 0.25 for corn protein; and 0.34 for soybeans protein.
- b. The slope errors (e.g. slope-1) calculated using the most recent calibration and all available raw data collected within the last 3 years shall not exceed: 0.05 for barley protein and corn protein; 0.03 for corn oil; 0.32 for soybeans oil; 0.036 for soybeans protein; and 0.022 for wheat protein.

Failure to meet the requirements in either item a. or b. above will cause a "No Longer Approved for Use" status to be assigned to the affected grain type(s) on the NTEP Certificate of Conformance (CC) for that instrument. Calibration coefficients will not be listed for any calibration failing these requirements.

Until calibrations for NTEP grains and constituents have been evaluated successfully they shall not be used on NTEP instruments. Calibrations for any of the NTEP grain types that have not been evaluated (or that a manufacturer chooses not to provide) will be listed on the CC as "Not Available."

V. Criteria for NTEP Near Infrared Grain Analyzer Calibration Review

The following criteria are to be applied along with criteria listed in Part IV above to verify calibration performance.

Special Considerations for "Multi-Class" Calibrations

For Phase II data for each individual grain class included in a "multi-class" calibration will be reviewed to determine what adjustment, if any are needed.

Data for each individual grain class and the combined data for all grain classes included in the "multi-class" calibration will be reviewed to verify calibration performance for each individual grain class and the combined data.

Mr. Andy Gell (Foss North America) and Mr. Larry Speaks (Perten Instruments) expressed concerns about the slope because it is dependant on sample set and range. Ms. Cathy Brenner (AMS, FGIS) requested feedback from the Sector

on Annual time frame for testing, sample size, SEP and bias. Mr. Gell and Mr. Speaks expressed agreement with annual time frame, cost, sample size and SEP and bias. Mr. Gell and Mr. Speaks requested additional time to get feedback on the proposed tolerances. Mr. Karl Cunningham (Illinois) suggested that after getting additional feedback that a final summary be provided to the Sector. Ms. Brenner agreed to provide a table of tolerances that the manufacturers can review and a summary of feedback on the tolerances from the manufactures for the 2020 GA Sector meeting. The earliest the requirements could be added to NCWM Publication 14 would be the 2021 publication.

2020 Grain Analyzer Sector Meeting:

During the 2020 Grain Analyzer Sector Meeting, Ms. Brenner provided an updated grain tolerance table, and reported that the additional work needed on the NCWM Publication 14 wording would be available in a few days. Below is the proposed wording to be inserted into the 2021 edition of Publication 14, Near Infrared Analyzers, Test Procedures and Tolerances.

IV. Tolerances for Calibration Performance

Calibration performance must be tested against established criteria at the following stages of the type evaluation process:

1. Evaluation of the calibration data supplied by the manufacturer with the application for type evaluation.
2. Evaluating instrument and calibration performance for corn oil and protein; durum wheat protein; hard white wheat protein; hard red spring wheat protein; hard red winter wheat protein; six-rowed barley protein; soft red winter wheat protein; soft white wheat protein; soybeans protein and oil; and two-rowed barley protein (accuracy test discussed earlier).
3. Review of ongoing calibration data collected as part of the national calibration program (Phase II).

In order for a calibration to remain on the certificate of conformance, the calibration must continue to meet tolerances for the initial evaluation's Accuracy Standard Error of Performance (SEP) test. The latest three years of data will be used to make decisions regarding the need to make a calibration update.

Whenever a calibration update is made, the manufacturer shall re-predict protein and/or oil values using the three most recent years of available raw data collected by the Type Evaluation Laboratory.

Updated calibrations will be approved based upon the re-predicted protein and/or oil values. Tolerances will be the Accuracy tolerance found in Table 2. Additionally, all calibrations must meet the average bias to the applicable FGIS reference method for all samples calculated using the most recent calibration and all available raw data collected within the last 3 years shall not exceed 60% of the applicable SEP tolerance. The tolerances are combined in Table 3.

<u>Table 3. Calibration Performance Tolerances</u>			
<u>Grain Type</u>	<u>Constituent</u>	<u>Accuracy SEP Tolerance</u>	<u>Bias Tolerance</u>
<u>Durum Wheat</u>	<u>Protein</u>	<u>0.30</u>	<u>± 0.18</u>
<u>Hard Red Spring Wheat</u>	<u>Protein</u>		
<u>Hard Red Winter Wheat</u>	<u>Protein</u>		
<u>Hard White Wheat</u>	<u>Protein</u>		
<u>Soft Red Winter Wheat</u>	<u>Protein</u>		
<u>Soft White Wheat</u>	<u>Protein</u>		

<u>All-Class Wheat Calibration*</u>	<u>Protein</u>		
<u>Two-rowed Barley</u>	<u>Protein</u>	<u>0.40</u>	<u>± 0.24</u>
<u>Six-rowed Barley</u>	<u>Protein</u>		
<u>All-Class Barley Calibration*</u>	<u>Protein</u>		
<u>Corn</u>	<u>Protein</u>	<u>0.50</u>	<u>± 0.30</u>
	<u>Oil</u>	<u>0.50</u>	<u>± 0.30</u>
<u>Soybeans</u>	<u>Protein</u>	<u>0.55</u>	<u>± 0.33</u>
	<u>Oil</u>	<u>0.45</u>	<u>± 0.27</u>

Note: Calibrations marked with an asterisk () are "Multi-class" calibrations.*

Failure to meet the requirements in either Accuracy SEP or bias tolerance above will cause a "No Longer Approved for Use" status to be assigned to the affected grain type(s) and constituent(s) on the NTEP Certificate of Conformance (CC) for that instrument. Calibration coefficients will not be listed for any calibration failing these requirements.

Until calibrations for NTEP grains and constituents have been evaluated successfully, they shall not be used on NTEP instruments. Calibrations for any of the NTEP grain types that have not been evaluated (or that a manufacturer chooses not to provide) will be listed on the CC as "Not Available."

V. Criteria for NTEP Near Infrared Grain Analyzer Calibration Review

The following criteria are to be applied along with criteria listed in Part IV above to verify calibration performance.

Special Considerations for "Multi-Class" Calibrations

For Phase II, data for each individual grain class included in a "multi-class" calibration will be reviewed to determine what adjustments, if any, are needed.

Data for each individual grain class and the combined data for all grain classes included in the "multi-class" calibration will be reviewed to verify calibration performance for each individual grain class and the combined data.

Appendix C

Standard Data Format (for Submitting NTEP NIR Data for Calibration Review)

1. Data Fields:

<u>Sample I.D.</u>	<u>NIR Oil</u>	<u>Ref Oil</u>	<u>NIR Protein</u>	<u>Ref Protein</u>	<u>Moisture Basis</u>	<u>NIR Model</u>	<u>NIR S.N.</u>	<u>Calibration I.D.</u>	<u>Grain Type</u>	<u>Crop Year</u>
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4. Description of Data Fields:

Sample I.D.: The unique sample number assigned by FGIS.

NIR Oil: The NIR-predicted oil. For barley and wheat, this field must be NULL.

Ref Oil: The FGIS solvent oil extraction reference result. For barley and wheat, this field must be NULL.

NIR Protein: The NIR-predicted protein.

Ref Protein: The FGIS combustion nitrogen analyzer protein reference result.

Moisture Basis: The moisture content at which the NIR protein and oil predictions are reported.

NIR Model: The name of the model submitted by the manufacturer.

NIR S.N.: The instrument serial number assigned by the manufacturer.

Calibration I.D.: The unique name or number of the calibration used to predict the moisture value.

Grain Type: The abbreviated name of the grain type (see accompanying table).

Crop Year: The crop year in which the sample was received.

5. Instructions for Submitting:

Email as a Microsoft Excel® file or as a comma separated text file with each grain in a separate file. Name the files using the abbreviations in the accompanying table and report each observation as a single record on a single line. If more than one grain type is sent at a time, the data may be combined into a single file named using the model and current crop year.

File Names for Submitting NTEP NIR Data for Calibration Review	
Grain Type	File Name
<u>Durum</u>	<u>DUWH</u>
<u>Hard Red Spring Wheat</u>	<u>HRS</u>
<u>Hard White Wheat</u>	<u>HDWH</u>
<u>Soft White Wheat</u>	<u>SWW</u>
<u>Hard Red Winter Wheat</u>	<u>HRW</u>
<u>Soft Red Winter Wheat</u>	<u>SRW</u>
<u>Six-Rowed Barley</u>	<u>SRB</u>
<u>Two-Rowed Barley</u>	<u>TRB</u>
<u>Corn</u>	<u>C</u>
<u>Soybeans</u>	<u>SB</u>

Since the updated proposal was received after the meeting, the members of the GA Sector will be polled via email for their acceptance of the wording. If consensus is achieved, the proposal will be placed into the 2021 edition of Publication 14; If consensus is not achieved, the item will carry over to next years meeting. An email was sent to all sector members on August 20, 2020 requesting agreement with a response deadline of the end of the business day Friday, September 4, 2020. The GA Sector received a comment from Mr. Charles Hurburgh (Iowa) offered the following two suggestions.

1. Specify or include the moisture basis of the data at each point. I understand that the mb is given in the Handbook, but my experience is that this is the biggest confusion in NIR data. For sure you will get data from someone that is a different moisture basis than the one in the handbook
2. Include the state of origin in the data line. Geographic diversity is very important even if the data has a wide data range.

Several members agreed, and no one opposed Mr. Hurburgh, suggestions. Mr. Jason Jordan (GIPSA) amended the wording, show above, to reflect the additions.

No opposition was received, the wording will be included into the 2021 Edition of Publication 14.

11. State Weights and Measures Issues with Inspection of Grain Moisture Meters for Corn /Tolerances for UGMA Meters

Source:

Ms. Diane Lee (NIST, OWM Legal Metrology Device Group)

Background / Discussion:

Ms. Lee received calls requesting a copy of the annual request for grain samples and list of grains that GIPSA request from States to include in the ongoing calibration program. These requests came from various States and other interested parties. One State reported seeing a difference between a UGMA meter and another meter on corn samples and wanted to ensure that grain samples in their State were represented in the ongoing calibration program.

2016 Grain Analyzer Sector Meeting

During the discussion of this item at the 2016 Grain Analyzer Sector meeting it was mentioned that this issue was raised when two states would not accept the new corn calibrations for grain moisture meters when they observed a difference in results for corn on different meter technologies. During the discussion, it was noted that the States that reported problems with the corn calibrations were States that have high ethanol production. It was explained that States with high ethanol production may have a high production of modified corn (corn modified to increase ethanol production). Since calibrations are based on a national sample set with grains collected from across the U.S., these modified samples may not have been included in the national sample set which could have contributed to the irregularities with the updated corn calibrations. It was suggested during the Sector meeting that modified corn samples be included in the national sample set and to monitor corn calibrations and modified corns for ethanol production. It was also noted that States should use the recommended procedures in NIST HB 44 when testing to ensure that errors are not introduced due to incorrect test procedures.

Following the discussion of this agenda item, Mr. Jeff McCluer, who had submitted an item to include on the 2016 Sector agenda, that was ultimately not included on the agenda based on his request to change GIPSA tolerances, which is not in the scope of the GA Sector, presented information in reference to tolerance for UGMA meters. He explained that if the UGMA meter technology can make better measurements, he recommends that a reduction in the tolerances should be made. Mr. Hurburgh noted that the Sector has not conducted a study of the new technology and that a task force could be developed to look at the results of these meters. Mr. Hurburgh agreed to chair the task group to look at results from UGMA meters.

After some discussion with Dave Funk, Grain Quality Analytics, LLC and some research on the tolerances for UGMA meters. At the temperature extremes errors in measurement are increased so the tolerances were set to account for an average error in these meters. As such, the task group should include a review of the measurements at varying temperature ranges.

2017 Grain Analyzer Sector Meeting

During discussion of this issue at the 2017 Grain Analyzer Sector meeting, it was suggested that different tolerances for this technology may be needed. Mr. Jim Truex mentioned that different tolerance for technology has been considered in the past for other devices. The Sector decided to form a task group to take a closer look at field tolerances associated with UGMA meters. Mr. Hurburgh agreed to chair the work group and the following State weights and measures GA Sector members agreed to participate on the work group:

Mr. Karl Cunningham – Illinois

Mr. Randy Burns – Arkansas

Mr. Tom Hughes - Missouri

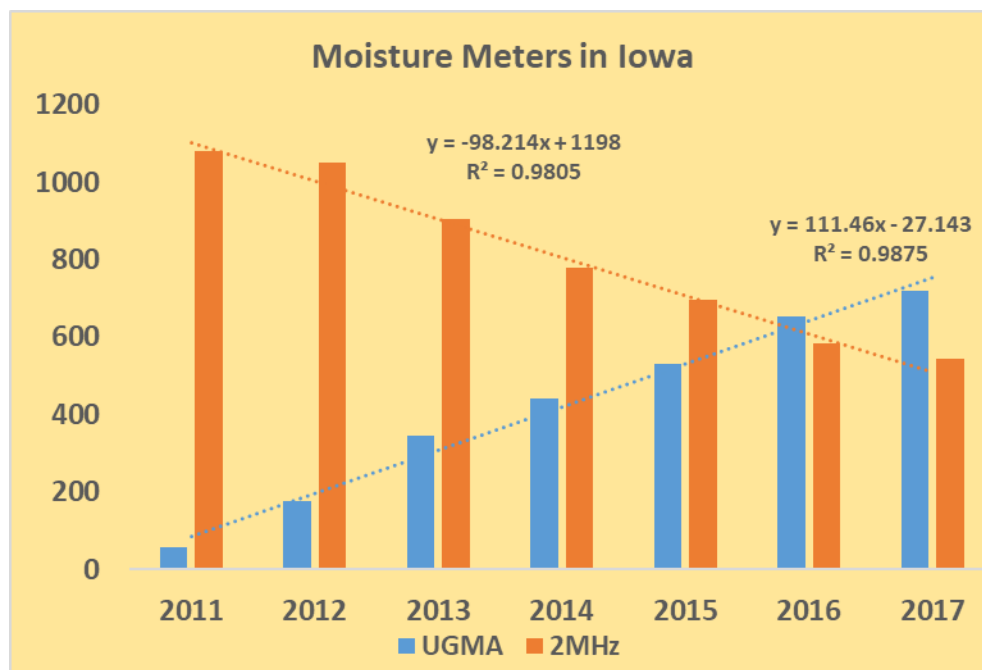
It was noted that the task group may review previous inspection data for UGMA meters for wheat and corn samples.

2018 Grain Analyzer Sector Meeting

Dr. Hurburgh collected and analyzed data from Iowa State Weights and Measures Program to compare UGMA meters and 2MHz meters to assess a need for changes to the tolerances in NIST HB 44 Section 5.56(a) for the air-oven test

method. During the 2018 meeting, Mr. Hurburgh reported that based on the data, UGMA meters read closer to the reference air oven moisture results than non-UGMA meters. See data below. The Y-axis on the chart below represents the number of meters (UGMA and 2MHz meters) and shows that as of 2017 the number of UGMA meters exceed the number of 2MHz meters in Iowa. It was also noted during the 2018 Grain Analyzer Sector meeting that the current tolerances were developed in 1991 and have not changed with the change in technology for these devices; and is needed for grain industry risk management.

Iowa Moisture Meter Inspection Results				2014-2017		
			Average Result on Inspector Sample			
Year	Tech	Number of Meters	Corn 1 Meter-Std (% pts)	Corn 2 Meter-Std (% pts)	Soybean Meter-Std (% pts)	
2014	UGMA	440	-0.02	0.02	-0.01	
2015	UGMA	531	0.04	-0.06	-0.02	
2016	UGMA	654	0.05	-0.06	0.01	
2017	UGMA	720	-0.18	-0.06	-0.05	
	Avg		-0.03	-0.04	-0.02	
2014	2MHz	679	-0.25	0.04	-0.07	
2015	2MHz	595	-0.29	-0.38	0.02	
2016	2MHz	483	-0.28	-0.42	0.04	
2017	2MHz	445	-0.15	-0.35	-0.01	
	Avg		-0.24	-0.28	0.00	
Different samples each year for Corn 1, Corn 2, Soy						



At the 2018 GA Sector meeting the Sector agreed to make changes to the tolerances for the air-oven reference method in NIST Handbook 44 Section 5.56(a) and following the review and discussion of the data, the NIST Technical Advisor, Ms. Lee, developed the Form 15 that included the proposed changes to NIST HB 44 that was agreed to by the Sector along with a table that provided specific tolerances per the proposed changes to NIST HB 44. The Table of specific tolerances that will result from the proposed changes to the HB and the proposed changes to NIST HB 44 are included below:

Specific tolerances resulting from the proposed change to NIST HB 44 Section 5.56(a) tolerances for air-oven method field tolerances.		
Moisture (%)	Tolerance (0.03 % percent of the moisture content)	Minimum Tolerance (0.5 % in moisture content)
8	0.24	0.5
9	0.27	0.5
10	0.30	0.5
11	0.33	0.5
12	0.36	0.5
13	0.39	0.5
14	0.42	0.5
15	0.45	0.5
16	0.48	0.5
17	0.51	0.5
18	0.54	0.5
19	0.57	0.6
20	0.60	0.6
21	0.63	0.6
22	0.66	0.7

Proposed changes to NIST HB 44 Section 5.56(a) Air-Oven Reference Method Tolerances - T.2.Tolerances.

T.2.1. Air Oven Reference Method. – Maintenance and acceptance tolerances shall be as shown in Table T.2.1. Acceptance and Maintenance Tolerances Air Oven Reference Method. Tolerances are expressed as a fraction of the percent moisture content of the official grain sample, together with a minimum tolerance (Amended 2001)

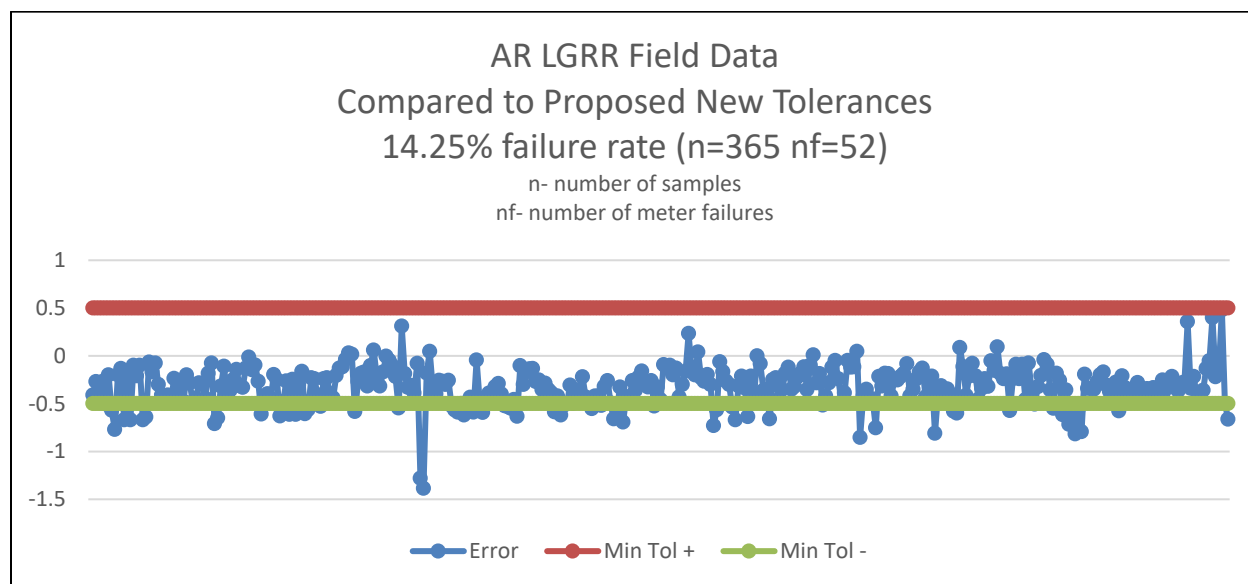
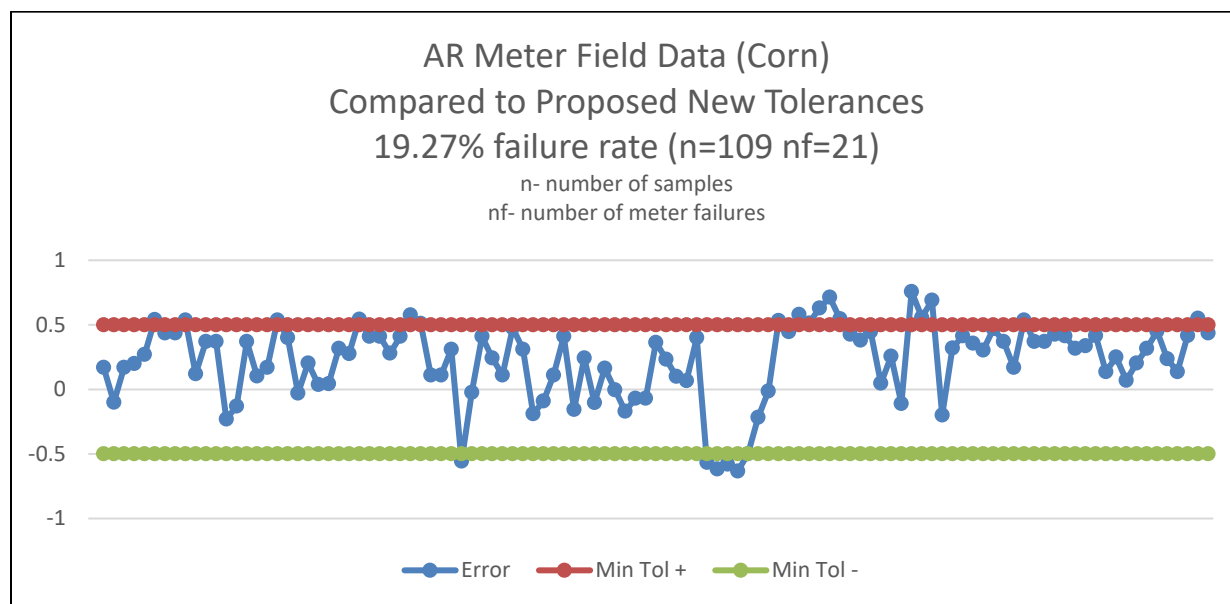
Table T.2.1. Acceptance and Maintenance Tolerances Air Oven Reference Method for All Grains and Oil Seeds		
Type of Grain, Class, or Seed	Tolerance	Minimum Tolerance
Corn, oats, rice, sorghum, sunflower All other cereal grains and oil seeds	0.0503 of the percent moisture content 0.04 of the percent moisture content	0.85 % in moisture content 0.7 % in moisture content

(Amended ~~2001~~20XX)

The GA Sector's proposal for changes to Table T.2.1 were forwarded to the NCWM for inclusion on the 2019 S&T Interim NCWM Meeting agenda and this proposal was circulated to regional weights and measures associations for review and recommendations. Prior to the NCWM 2019 Interim meeting, Mr. Burns provided data that showed that although data provided for corn and soybeans may not indicate a problem with changing the tolerance as proposed,

other grains may be affected by the proposed tolerance. The GA Sector was informed of the impact that a change in tolerance may have on other grains. As such, the GA Sector was polled and they agreed that the original proposal be given a developing status so that the GA sector may review data at its 2019 GA NTETC Meeting.

Ms. Lee created graphs from data provided by Mr. Burns and provided the Sector copies of the graphs during the 2019 GA Sector Meeting. Ms. Lee provided an overview of the graphs and information included in the graphs which showed a meter failure rate for corn sample of 19.27 % and a meter failure rate for long grain rice samples of 14.25 %. See graphs below:



Mr. Burns mentioned that each State may not see the same results. Mr. Burns further stated that samples are screened on laboratory meters to within $\pm 0.3\%$ and samples are used 10 times before they are rechecked. Mr. Gordon Elliott (The Steinlite Corporation) recommended national data over a longer period of time is needed to make a determination of whether or not the proposed tolerances are acceptable. Ms. Lee agreed to develop a standard form so that the GA Sector can collect additional information from participating States. Mr. Elliot agreed to compile the data and also offered an alternative to create a program that sector members could run, if he had an example of the data format. Mr.

Elliott also requested Phase 2 data to determine meter-air oven errors. Following the GA Sector meeting, meter manufacturers were sent a request to share Phase II data with model identifiers removed, with Mr. Elliott as part of the statistical analysis. All of the manufacturers granted permission for the data to be shared.

2020 Grain Analyzer Sector Meeting

Mr. Elliott reported on the results of the analysis of instruments performance using Phase II test data for the previous 7 years. The results were separated into UGMA and non-UGMA meters. A copy of the preliminary analysis is available for view or can be downloaded for printing from the NTEP Grain Analyzer Sector page, 2020 Meeting on the NCWM website at www.ncwm.com/grain-sector. Using NTEP meter data, not identified by meter manufacturer, for both UGMA and non-UGMA meters, Mr. Elliott provided a preliminary report and review of graphs showing sample deviations from the Air-Oven Method (AOM). Mr. Elliott reviewed the graphs which showed that the deviations were greater for non-UGMA meters. Additional analysis of in-tolerance and out-of-tolerance comparisons, and errors are included in his preliminary report. The members discussed the idea of expanding the analysis by requesting field evaluation data from State Weights and Measures Program, however; there was the concern about differences in data format and what impact this would have on the amount of work needed to obtain accurate results. Ms. Diane Lee (NIST) reported that she had developed an Excel Spreadsheet that could be used to record the field evaluation. The members reviewed the spreadsheet and offered suggestion to modify the spreadsheet by removing the “Min Tol%” and the “In Tol / Out Tol” columns. Some members mentioned that the field evaluation data was collected in WinWam (a third-party program designed to collect field evaluation data for all device types) and questioned if the WinWam program had a data export function and if so, would the data format permit an easier import into the file used in Mr. Elliott’s analysis. Ms. Lee agreed to modify her Excel Spreadsheet based on the comments and Mr. Karl Cunningham agreed to work with his IT Support to review the export functions of the WinWam Software. It was agreed field evaluation data from a 3-year minimum period would be acceptable to expand the review of instrument performances against the proposed tolerance changes.

2021 Grain Analyzer Sector Meeting

Ms. Lee will update the Sector Members on any changes to the previously provided information. During the 2021 GA Sector Meeting, Ms. Lee reviewed an Excel spreadsheet that she created for the purpose of reporting field data. The members reviewed the columns in the spreadsheet and suggested some modifications. The topic then moved to the amount of data to collect and possible other means of providing the information. Currently, the data range is three years, it was agreed that this was sufficient. The discussion turned to the format, data could be entered into the spreadsheet; however, some states reported that they have the information in a program called Win Wam. An effort was going to be made to see if the correct information was available in the Win Wam Program and how it could be extracted. States were encouraged to provide this information to Ms. Lee and Mr. Gordon Elliott (The Steinlite Corporation) by the end of November 2021. Mr. Elliott agreed to collect and report on the data received.

12. Meter to Like-Type Meter Testing and Definition of Like-Type Meter

Source:

Grain Analyzer Sector

Background/Discussion:

Following the discussion of the Items included on the 2017 Grain Analyzer Sector’s 2017 Agenda, the GA Sector members were asked if there were any additional topics for discussion. A discussion on Meter to like-type meter testing and the definition of a liker-type meter followed. During the discussion test procedures for meter to like-type meter testing were requested. It was noted that there may be only about two states using this type of test method and that it may be due to the cost of obtaining like-type meters to perform the test. A question was raised as to what is considered a like-type meter and it was explained that like-type meant that the make and model were the same. Suggestions were made to include a definition for like-type in NIST HB 44 and to consider documenting test procedures for meter to like-type meter testing.

2018 Grain Analyzer Sector Meeting

During the 2018 Grain Analyzer Sector meeting, the sector discussed industry and State weights and measures programs that used meter to like-type meter testing and master meter test methods. Kansas reported that reference meters are used to collect moisture results on samples. The samples are then taken to the field to compare to

commercial field moisture meters. It was also reported that most State weights and Measures that use a meter to meter test method for testing field meters do not use a meter to like-type meter testing program which is specified in NIST HB 44. The Perten representative reported that Perten uses three layers of master meters when calibrating their devices. It was noted that an analysis of the failure rate for meter to meter test methods should be investigated and an analysis of all the issues for meter to meter test methods is needed along with test methods for this type of field testing.

There are a number of items on the 2019 NCWM S&T agenda that address the use of master meters for field testing that includes terms and definition for these standards. The NCWM has assigned a task group to discuss the issue of the use of master meters and terms and definitions for these standards. The GA technical advisor will follow the discussions of the task group and provide updates to the Sector on the task group discussions. It was suggested that before moving forward with additional efforts to address meter to like type meter testing for grain analyzers, that the GA sector observes the Task Group's actions. The Task Group actions may include guidelines for the use of master meters that may impact field test procedures for meter to like-type meter testing.

The Sector discussed tabling the discussion of meter to like-type meter testing until additional information is provided from the data collection on master meters and information is received from the NCWM task group concerning field standards and master meters terminology and definitions. Agenda Item B-1 currently on the NCWM S&T agenda was given an Assigned status and a task group will be looking at definitions for field standards, transfer standards and master meters. Mr. Loren Minnich (Kansas) noted that it may be good to have a representative from the GA sector because one of the items included in the Block is a grain moisture meter issue. Mr. Randy Burns (Arkansas) volunteered to participate on the task group.

During the 2020 GA Sector meeting, Ms. Lee reminded everyone that this item is being held until the NCWM Task Group has completed its work concerning field standards and master meter terminology and definitions. Ms. Lee informed everyone that the S&T Committee Agenda Item Number of these items is Block 1 (B1). This item will be reviewed at the 2021 GA Sector meeting.

During the 2021 GA Sector Meeting, Ms. Lee reported that the work of the NCWM Task Group has been given to the S&T Committee. The S&T Committee proposal will be discussed during the 2021 – 2022 agenda cycle.

13. 2020-2024 Interagency Agreement to Fund the GMM Ongoing Calibration (Phase II) Program

Source:

Ms. Cathy Brenner (USDA, GIPSA)
Ms. Diane Lee (NIST, OWM)

Background/Discussion:

The current 2015-2019 Interagency Agreement is the fifth 5-year agreement of the on-going calibration program. The current agreement was signed in July 2015 and runs through analysis of the 2018 crop and issuance of the 2019 Certificates of Conformance. The 2019 certificates mark the final year of the current agreement. It should be noted that annual calibration activities occur in two government fiscal years and are better defined by a starting date of July 1.

During the 2018 Grain Analyzer Sector meeting, Ms. Brenner reviewed a cost estimate for the Phase II, Ongoing Calibration Program that was prepared by FGIS (see cost estimates below). The cost estimate is based on collecting a total of 740 samples for the 15 NTEP grains and assumes that NIST and FGIS are able to provide funding up to \$30,000 to subsidize the program. In response to the review Mr. Andy Gell noted that the cost are similar to the current ongoing calibration program for grain moisture meters. The proposed cost analysis table is provided below:

Total NIR Models (including official model)	Number of NTEP only models	Total Program Cost = TP	Funding From NIST =TP/3	Funding from FGIS =TP/3	Funding from Manufacturers = TP-NIST-FGIS	Cost per model
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= TM	= N					
3	1	\$ 12,362	\$ 4,121	\$ 4,121	\$ 4,120	\$ 1,373
4	2	\$ 24,724	\$ 8,241	\$ 8,241	\$ 8,242	\$ 2,061
5	3	\$ 37,086	\$ 12,362	\$ 12,362	\$ 12,362	\$ 2,472
6	4	\$ 49,448	\$ 16,483	\$ 16,483	\$ 16,482	\$ 2,747
7	5	\$ 61,810	\$ 20,603	\$ 20,603	\$ 20,604	\$ 2,943
8	6	\$ 74,172	\$ 24,724	\$ 24,724	\$ 24,724	\$ 3,091
9	7	\$ 86,534	\$ 28,845	\$ 28,845	\$ 28,844	\$ 3,205
10	8	\$ 98,896	\$ 30,000	\$ 30,000	\$ 38,896	\$ 3,890

During the 2019 GA Sector Meeting, Ms. Lee provide an update on the status of the 2020-2024 interagency agreement. Ms. Lee provided background on the Ongoing Calibration Program (Phase II) and reported that NIST PML now has a dedicated person that monitors and assist with all Interagency agreements. Ms. Lee reported that the Interagency agreement is currently being reviewed by legal counsel.

During the 2020 GA Sector meeting, Ms. Brenner reported that Mr. Jason Jordon is developing the costs for the 2020 Phase II, Ongoing Calibration Program and initial indications shown that the costs will be slightly lower than the 2019 costs.

14. Change in Meeting Agenda and Summary Preparation

Source:

NTEP Administrator

Background/Discussion:

As reported at the 2020 NCWM Interim in Riverside, California, NIST and the NCWM Board of Directors agreed to a change in the responsibilities for the development of the meeting agenda and the writing of the meeting summary. This change removes these tasks from the NIST Technical Advisor and moves them to the responsibility of the individual Sectors. To move forward with this change, the Sector Members are tasked with creating a position assigned to an individual who will be responsible for creating these documents. I need to point out that the NIST and NTEP Technical Advisor will support the individual in these tasks. As this may be the first you heard of this change, the NTEP Technical Advisor agreed to write the Meeting Summary for the 2020 meeting.

During the discussion, Mr. Cunningham (Sector Chair) mentioned that he is planning on stepping down as the Sector Chair and suggested that this would be a good time to find two individuals to step up into these roles. Mr. Flocken agreed to work with Mr. Cunningham to develop a plan for accomplishing this task.

The Sector is looking for an individual or individuals to fill the meeting summary scribe and for a possible replacement for Mr. Karl Cunningham as Chair of the Sector. Mr. Cunningham expressed an interest in stepping down from the Chair position. Anyone interested in filling either of these position, please contact Darrell Flocken (NTEP Administrator) at darrell.flocken@ncwm.com.

15. Next Sector Meeting

The GA sector meetings are typically held the second week in August, start on a Tuesday (8:00 am to 5:00 pm) and are held at the Hyatt Place at the Kansas City, Missouri Airport.

If you would like to submit an agenda item for the 2022 meeting, please contact any of the following persons by June 1, 2022:

Mr. Darrell Flocken, NTEP Administrator, at darrell.flocken@ncwm.com

Ms. Diane Lee, NIST Technical Advisor, at diane.lee@nist.gov

There was discussion on moving the meeting date to later in August, however; it was mentioned that this would cause conflict with the Weighing Sector Meeting and preparation time needed to prepare for the upcoming Regional Association Meetings. It was agreed that the meeting dates and location would remain consistent with past years. The GA Sector will meet on Wednesday, August 10, 2022 at the Hyatt Place hotel at the Kansas City, MO Airport.

16. Meeting Attendance

The following individuals participated in the 2020 GA Sector meeting.

Grain Analyzer Sector Members:

Mr. Karl Cunningham	Illinois	Mr. Houston Naugher	State of Missouri
Mr. Darrell Flocken	NCWM	Mr. DJ Nolan	N/A
Ms. Diane Lee	NIST, OWM	Mr. Mike Schackel	DICKEY-john
Mr. Randy Burns	Arkansas	Mr. Jeff Van Fossen	USDA, FGIS
Ms. Tina Butcher	NIST, OWM	Mr. Jimmy Williams	State of Missouri
Mr. Jason Jordon	USDA, FGIS		
Ms. April Lee	North Carolina		
Mr. Loren Minnich	Kansas		
Ms. Rachel Beiswenger	TSI Incorporated		
Mr. Andrew Gell	Foss North America		
Mr. Casey Frakes	The Steinlite Corporation		

Other Participants:

Mr. Gordon Elliott	Consulting for The Steinlite Corporation
Mr. Houston Naugher	Arkansas
Ms. Eva Ramirez	Arkansas
Mr. Larry Speaks	Perten Instruments, Inc.
Mr. Todd Campbell	TSI Incorporated
Mr. Rodger Vanderkolk	TSI Incorporated
Ms. Cathleen Brenner	USDA, FGIS
Mr. Mike Manheim	NCWM
Ms. Jill Franke	Arkansas
Mr. Mike Schackel	Dicky-john

The following individuals participated in the 2021 GA Sector meeting.

Ms. Rachel Beiswenger	TSI Incorporated
Mr. Johnny Bell	State of Missouri
Mr. Todd Campbell	TSI Incorporated
Mr. Karl Cunningham	State of Illinois
Mr. Gordon Elliott	The Steinlite Corporation
Mr. Darrell Flocken	NCWM/NTEP
Mr. Casey Frakes	The Steinlite Corporation
Mr. Andrew Gell	Foss North America
Mr. Ivan Hankins	State of Iowa
Mr. Charlie Hurburgh	Iowa State University
Mr. Jason Jordan	USDA, FGIS
Ms. April Lee	State of North Carolina
Ms. Diana Lee	NIST, OWM
Mr. Mike Manheim	NCWM/NTEP
Mr. Loren Minnich	State of Kansas

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Appendix D

National Type Evaluation Program (NTEP) Measuring Sector Meeting Summary

September 22 – 23, 2020
Virtual Meeting

September 21 – 22, 2021
Pittsburgh, Pennsylvania

Table A
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Table B Glossary of Acronyms			
CC	Certificate of Conformance	NTETC	National Type Evaluation Technical Committee
DMS	Division of Measurement Standards	OIML	International Organization of Legal Metrology
ECR	Electronic Cash Register	OWM	Office of Weights and Measures (NIST)
EVFS	Electric Vehicle Fueling Systems	PD	Positive Displacement
HB 44	NIST Handbook 44 “Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices”	Pub 14	NCWM Publication 14
LMD	Liquid Measuring Devices	RMFD	Retail Motor-Fuel Dispenser
mA	milliamp	SI	International System of Units
MFM	Mass Flow Meters	S&T	Specifications and Tolerances
NCWM	National Conference on Weights and Measures	TG	Task Group
NIST	National Institute of Standards and Technology	VTM	Vehicle Tank Meter
NTEP	National Type Evaluation Program	W&M	Weights and Measures
This glossary is meant to assist the reader in the identification of acronyms used in this agenda and does not imply that these terms are used solely to identify these organizations or technical topics.			

Carry-over Items:

1. Laboratory and Field Evaluation – Clarification of Language

Source:

NTEP Laboratories

Background:

The NTEP evaluators have experienced confusion when interpreting the “Laboratory or Field Evaluation” section of the LMD checklist. At its 2019 meeting, the Sector reviewed proposed changes from a small task group appointed in 2018 to clarify this portion of the checklist. After some discussion and additional changes, the Sector agreed to recommend changes to this section for inclusion in the 2020 edition of NCWM Publication 14.

At that meeting, the Sector agreed that a future discussion needs to be held to explore the different aspects of “compatibility,” including compatibility of separately evaluated and certified measuring and indicating elements as well as compatibility of changes to metrologically significant components of complete devices.

- The following individuals agreed to work on this issue of “Compatibility of Components:”
 - Mr. Marc Buttler (Emerson)
 - Ms. Tina Butcher (NIST Office of Weights and Measures)
 - Mr. Craig Cavanaugh (Tuthill Transfer Systems)
 - Mr. Allen Katalinic (NCWM NTEP)
 - Mr. Dmitri Karimov (Teri G agreed to explore the possibility of Liquid Controls involvement)
 - Mr. Rich Miller (FMC)
 - Mr. John Hathaway (Murray Equipment)
- The group was asked to consider at least the following two key areas relating to “compatibility” and prepare a recommendation for the Sector to consider at its next meeting for addressing these in type evaluation:
 - The case in which individual certified equipment is used to create a metrologically complete, certified system.
 - The case in which an existing, certified system is extended through the addition compatible devices through the addition of certified equipment.
- The group was also asked to consider how third-party software is to be addressed with regard to compatibility.

At the 2019 Measuring Sector meeting, a small task group of volunteers were tasked with developing more definitive criteria for the current “20-day permanence test” used in the NTEP Field and Permanence Testing phase of evaluating mobile electronic devices and making recommendations to the Sector for possible changes to NCWM Publication 14. The **20-Day Permanence Criteria Task Group** consisted of the following individuals:

- Ms. Tina Butcher (NIST Office of Weights and Measures)
- Mr. Craig Cavanaugh (Tuthill Transfer Systems)
- Mr. John Hathaway (Murray Equipment)
- Mr. Allen Katalinic (NCWM NTEP)
- Mr. Dmitri Karimov (Liquid Controls)
- Mr. Rich Miller (FMC)

- Mr. Randy Ramsey (North Carolina)
- Mr. John Roach (California DMS)

The task group was asked to develop more specific standards to ensure consistency with items such as duration, road conditions, standards for degree of use, mileage, etc. need to be encompassed in the discussion.

2020 MS Meeting Discussion:

Before discussing the charge of the Work Group, it must be noted that the changes in the 2019 MS meeting that were agreed to be included in the 2020 edition of NCWM Publication 14 did not get put into the publication. The agreed to changes are listed in Appendix A of this agenda.

The Sector will hear updates and consider recommendations from both the “Compatibility of Components Task Group” (See Appendix B for a copy of the task groups recommendation) and the “20-Day Permanence Test for Mobile Electronic Devices Task Group” (See Appendix C for a copy of the task groups recommendation.)

During the 2020 MS Meeting, the members reviewed the recommendation from the Compatibility of Components Task Group as written in Appendix B. In general, all members agreed with the recommendation. Mr. Darrell Flocken (NTEP) asked for some additional time to review the recommendations to determine if any changes to NCWM Publication 14 are needed to support them. Mr. Flocken will bring any suggested change to NCWM Publication 14 to the 2021 MS Meeting.

The members also reviewed the recommendations from the 20-Day Permanence Test for Mobile Electronic Devices Task Group (See Appendix C for a copy of the task groups recommendation.) The discussion clearly indicated that the option to have the permanence testing performed in an accredited laboratory, in controlled conditions, was supported by industry members while NTEP Laboratory representatives expressed concerns with this approach. The members were asked to discuss the option of laboratory testing and determine if the option should be further developed. The consensus was to move forward with adding the wording as offered as “Recommendation 1”, with changing the word “should” to “shall” in the third bullet of paragraph 1.b., to the 2021 edition of Pub 14 and not pursue option 2 at this time.

2021 MS Meeting Discussion:

During the 2021 MS Meeting, Mr. Michael Keilty (MS Chair) along with Mr. Flocken reviewed the item and confirmed the changes to the 2021 edition of Pub 14 with the MS members. The members agreed and no additional action is required. The item is complete and will not appear in the 2022 meeting agenda.

2. Provisions to Address Systems Dispensing Diesel Exhaust Fluid (DEF) in the LMD Code – 2019 S&T Committee Agenda Item LMD-3

Background:

At the 2019 Annual Meeting, NCWM adopted changes to the following paragraphs in the LMD Code (along with changes to the “Application” Section and “User Requirements” which do not impact the NCWM Pub 14 checklist) in NIST Handbook 44 to better address metering systems used to dispense Diesel Exhaust Fluids and other products. These were considered on the S&T Committee’s Agenda under Item LMD-3 and are shown in the table below for reference.

- S.1.6.10. Pay-at-Pump Retail Motor Fuel Dispensers (LMD Checklist 2019 Edition, Page LMD-85)
- S.2.5. Zero-Set-Back Interlock, for Retail Motor-Fuel Devices. (No change needed to LMD Checklist 2019 Edition, Page LMD-42)
- S.4. Marking Requirements.
- S.5. Zero-Set-Back Interlock, for Retail Motor-Fuel Devices

A.1. General. – This code applies to:

- (a) devices used for the measurement of liquids, ~~including liquid fuels and lubricants~~, and
- (b) wholesale devices used for the measurement and delivery of agri-chemical liquids such as fertilizers, feeds, herbicides, pesticides, insecticides, fungicides, and defoliant.

(Added 1985)

S.1.6.10. Automatic Timeout – Pay-At-Pump for Retail ~~Motor-Fuel~~ Devices. – *Once a device has been authorized, it must de-authorize within two minutes if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than two minutes*
[Nonretroactive as of January 1, 2017]

(Added 2016) (~~Amended 20XX~~)

S.2.5. Zero-Set-Back Interlock, for Retail ~~Motor-Fuel~~ Devices – A device shall be constructed so that:

- (a) after a delivery cycle has been completed by moving the starting lever to any position that shuts off the device, an automatic interlock prevents a subsequent delivery until the indicating elements, and recording elements if the device is equipped and activated to record, have been returned to their zero positions;
- (b) the discharge nozzle cannot be returned to its designed hanging position (that is, any position where the tip of the nozzle is placed in its designed receptacle and the lock can be inserted) until the starting lever is in its designed shut-off position and the zero-set-back interlock has been engaged; and
- (c) in a system with more than one dispenser supplied by a single pump, an effective automatic control valve in each dispenser prevents product from being delivered until the indicating elements on that dispenser are in a correct zero position.

(Amended 1981, ~~and~~ 1985, and 20XX)

S.4.4.1. Discharge Rates – *On a retail device with a designed maximum discharge rate of 115 L (30 gal) per minute or greater, the maximum and minimum discharge rates shall be marked in accordance with S.4.4.2. Location of Marking Information; Retail ~~Motor-Fuel~~ Dispensers. The marked minimum discharge rate shall not exceed 20 % of the marked maximum discharge rate.*
[Nonretroactive as of January 1, 1985]

(Added 1984) (Amended 2003 and 20XX)

S.4.4.2. Location of Marking Information; for Retail ~~Motor-Fuel~~ Dispensers. – *The marking information required in the General Code, paragraph G-S.1. Identification shall appear as follows:*

- (a) within 60 cm (24 in) to 150 cm (60 in) from the base of the dispenser for system in a dispenser;
- (b) either internally and/or externally provided the information is permanent and easily read; and
- (c) on a portion of the device that cannot be readily removed or interchanged (i.e., not on a service access panel).

Note: *The use of a dispenser key or tool to access internal marking information is permitted for retail liquid-measuring devices.*

[Nonretroactive as of January 1, 2003]

(Added 2002) (Amended 2004 and 20XX)

...

S.5. Totalizers for Retail ~~Motor-Fuel~~ Dispensers – Retail ~~motor-fuel~~ dispensers shall be equipped with a non-resettable totalizer for the quantity delivered through the metering device.

[Nonretroactive as of January 1, 1995]

(Added 1993) (Amended 1994 and 20XX)

...

N.4.2.2. Retail Motor-Fuel and DEF Devices.

(a) Devices without a marked minimum flow-rate shall have a “special” test performed at the slower of the following rates:

- (1) 19 L (5 gal) per minute; or
- (2) the minimum discharge rate at which the device will deliver when equipped with an automatic discharge nozzle set at its slowest setting.

(b) Devices with a marked minimum flow-rate shall have a “special” test performed at or near the marked minimum flow rate.

(Added 1984) (Amended 2005 and 20XX)

UR.2.4. Diversion of Liquid Flow – A ~~motor-fuel~~ device equipped with two delivery outlets used exclusively in the fueling of trucks shall be so installed that any diversion of flow to other than the receiving vehicle cannot be readily accomplished and is readily apparent. Allowable deterrents include, but are not limited to, physical barriers to adjacent driveways, visible valves or lighting systems that indicate which outlets are in operation, and explanatory signs.

(Amended 1991 and 20XX)

UR.2.5. Product Storage Identification.

(a) The fill connection for any petroleum product or other product storage tank or vessel supplying petroleum product or other products ~~motor-fuel devices~~ shall be permanently, plainly, and visibly marked as to product contained.

Recommendation: While the specification sections noted above are currently referenced in the LMD Checklist, these sections are specifically covered under the “Retail Motor-Fuel Dispensers” portion of the checklist. The changes to NIST Handbook 44 were intended to make the references more generic so as to provide the ability to apply criteria to systems dispensing DEF. However, the current Pub14 checklist does not facilitate this.

The Sector is asked to discuss how to best address this issue so that NTEP evaluators have clear checklist criteria to apply to DEF-dispensing systems. Among possible options for the Sector to consider are:

1. Broaden the “RMFD” Checklist to Refer to “Stationary Retail Dispensing Systems”
2. Create as separate section for DEF dispensing systems, which would mirror many of the RMFD Checklist requirements and, perhaps, include additional guidance relative to DEF dispensing systems.

2019 MS Meeting Discussion:

Mrs. Butcher (Technical Advisor) presented the item and reviewed the two possible options noted above and asked if Sector members preferred one or the other of these options. She pointed out there is presently no section in the checklist to address DEF dispensers.

Mr. Moses commented he doesn't want to see separate checklists, and Mr. agreed, noting he doesn't want to add to the overall size of the checklist.

There was general agreement among Sector members present to lean toward the first option of broadening the RMFD checklist. Mrs. Butcher recommended that, if the Sector decides to pursue the option of broadening the RMFD checklist, the Sector should go back and review the RMFD checklist and develop a proposal to modify the checklist to encompass stationary retail dispensing systems. She also noted there are likely sections of that checklist which may not be appropriate for use with DEF.

Mr. Moses suggested the Sector's objective should be for NCWM. Publication 14 to align with NIST Handbook 44. For any gaps identified, the Sector should develop proposed changes to NIST HB 44 and once those are adopted make corresponding recommendations to modify the Pub 14 checklist.

Measuring Sector Chairman Keilty noted the MFM Code doesn't include these references to allow recognition for DEF.

The NTEP Laboratories are already applying these requirements, so there shouldn't be a significant impact on devices already evaluated.

Mrs. Butcher questioned how best to go about broadening current references to "retail motor-fuel dispensers" to include other stationary retail devices. A "search and replace" might be useful in identifying these references, but it would not be appropriate to replace all of them; some references might correctly apply to only RMFDs. The Sector discussed having one or a group of people do such as search to identify the references. Mr. Keilty suggested we include this as a carryover item with regard to these checklist changes.

Decisions:

The Sector agreed to the following corrections to the LMD Checklist:

- Correct the reference to "S.1.6.10. Automatic Timeout-Pay-At-Pump for Retail Devices" on pg. LMD-89. It reads S.6.1.10. and it should read S.1.6.10.
- Correct the existing reference to S.5. Totalizers on page LMD-45 of Appendix A to the Sector's Agenda. It reads "S.5.1." and should read "S.5."

Appendix A to the Sector's agenda has been revised to include the above corrections and other updates made during the Sector's meeting. The revised version is included as Appendix A to this summary.

The Sector also acknowledged the changes made by the NCWM to broaden the application of the LMD Code to encompass DEF and other devices. This is consistent with what the laboratories have already been doing and will continue to do.

The Sector agreed the RMFD section of the checklist needs to be broadened and not limited to "retail motor-fuel." However, the Sector is reluctant to do a "search and replace" without specifically reviewing the proposed changes to ensure there isn't an inadvertent problem created by a given change. Consequently, the Sector agreed that NTEP will through the RMFD checklist and do a "search and replace" marking the replacements as proposed changes for Sector review at its next meeting. This effort will include the following tasks and parameters.

- The search will include a search for the terms such as the following as well as any terms that are limiting:
 - "retail motor-fuel" (with the hyphen)
 - "retail motor fuel" (without the hyphen)
 - "retail fuel devices"

- “motor-fuel”
 - “motor fuel”
 - “retail” and “fuel” and motor”
- Mr. Flocken will assign Mr. Manheim the task of doing a search for and highlighting these terms in the electronic version of NCWM Publication 14.
 - The following people agreed to serve on a small task group who will assist by reviewing the marked document:
 - Mrs. Tina Butcher (NIST OWM)
 - Mr. Michael Keilty (Endress + Hauser)
 - Mr. Allen Katalinic (NCWM NTEP)
 - Mr. Brent Price (Gilbarco)

These individuals will provide comments back to Mr. Flocken. Mr. Flocken will ask Mr. Manheim to incorporate changes proposed by the Task Group.

- The final proposed changes as identified and agreed to by the task group will be included as a “carryover item” on the Sector’s 2020 Meeting Agenda and presented to the Sector for review and agreement at that meeting.

2020 MS Meeting Discussion:

Before discussing this agenda, it must be noted that the changes to correct the existing reference to S.5. Totalizers of the 2019 Sector’s Agenda was not made. The current code reference reads “S.5.1.” and should read “S.5.”

Appendix D is the highlighted version from Mr. Manheim showing all references to the term ‘retail motor fuel’.

During the 2020 MS Meeting, the members discussed the need to modify the current wording in NCWM Pub. 14, to follow the changes in NIST HB 44 to recognize DEF dispensers as being different than RMFDs. This led to a discussion of the possibility of other “dispensers” also being included. Both industry and NTEP evaluators believe that the current wording in NCWM Pub. 14 is sufficient for the evaluation of either dispenser type. Mr. Flocken accepted the assignment of searching NCWM Pub. 14 for any reference back to NIST HB 44, N.4.2.2. The following morning Mr. Flocken reported that one occurrence of N.4.2.2 was found in NCWM Pub. 14, page LMD-116, *A. Field Evaluation and Permanence Test of New-Design Meters in Retail Motor Fuel Dispensers, Repeatability*. The members reviewed the occurrence and agreed that it was generic in nature and could apply to any dispensing device type. Because of this, the membership agreed that no change to NCWM Pub. 14 was needed. However, the members also agreed that additional research should be done to confirm that the mentioning of a specific dispenser type does not preclude the application of the specification when evaluating DEF dispensers. The members agreed to hold this Item over until the 2021 MS Meeting. To accomplish this review a small task group was identified to review the contents of Appendix D and provide comments regarding the need to add DEF to any of the locations which mentions a specific dispenser type. The group is made up of the following: Ms. Butcher, Mr. John Hathaway (Murray Equipment), Mr. Price, Mr. Randy Moses (Wayne Fueling Systems), Mr. Randy Ramsey (North Carolina), Mr. Keilty, Mr. Rick Miller (FMC Technologies Measurement Solutions, Inc.), and Mr. Flocken. The group members agreed to review Appendix D and report their findings to Mrs. Butcher and Mr. Flocken by the end of January 2021. Mr. Flocken will summarize the comments received from the work group members into one document and schedule a Zoom Meeting in the March/April 2021 timeframe for the work group to review all comments and develop a recommendation for the MS Members to consider at the 2021 meeting.

2021 MS Meeting Discussion:

During the 2021 MS Meeting, Mr. Keilty opened the item up for discussion. After a review of the item and much discussion the members of the MS group felt that a change to include DEF to footnote 1 in Table T.2. of the LMD

Code in HB 44 was needed. The MS agreed to submit a Form 15 for the change. Mr. Keilty on behalf of the MS developed the proposal on a Form 15 which attending members reviewed and agreed too.

MS submitted the Form 15 to the NCWM (Don Onwiler) on 9-22-2021 in an attempt to get this walk on item to the regional meetings this year and get it on the National S&T agenda this year.

With the submittal of the Form 15, Mr. Keilty and the MS consider this item closed, with all attending members agreeing. This item can be removed from the 2022 meeting agenda and may be replaced by the submitted proposal if voted on in the July 2022 Annual meeting.

3. Liquefied Petroleum Gas Liquid-Measuring & Anhydrous Ammonia Liquid-Measuring Devices Code Paragraph S.2.5. Zero-Set-Back Interlock, Stationary and Vehicle Mounted Meters, Electronic – 2019 S&T Committee Agenda Item LPG-2

Background:

At its 2019 Annual Meeting, the NCWM adopted a new paragraph S.2.5. Zero-Set-Back Interlock, Stationary and Vehicle Mounted Meters, Electronic in the Liquefied Petroleum Gas (LPG) Liquid-Measuring Devices & Anhydrous Ammonia Liquid-Measuring Devices Code of NIST Handbook 44. Subsequent paragraphs were renumbered accordingly. This was considered on the S&T Committee's Agenda under Item LPG-2; see the Committee's 2019 Interim Report for additional details.

S.2.5. Zero-Set-Back Interlock, Stationary and Vehicle Mounted Meters, Electronic. – A device shall be so constructed that after an individual or multiple deliveries at one location have been completed, an automatic interlock system shall engage to prevent a subsequent delivery until the indicating and, if equipped, recording elements have been returned to their zero position. For individual deliveries, if there is no product flow for two minutes the transaction must be completed before additional product flow is allowed. The 2-minute timeout shall be a sealable feature on an indicator.
(Added 2019) (Nonretroactive as of 2021)

At its 2019 meeting, the NTEP Measuring Sector agreed to add a “note” to the existing Code Reference S.2.5. Zero-Set-Back Interlock that applies to stationary retail motor-fuel LPG and NH₃ dispensers to alert manufacturers of the approaching implementation date for this requirement on other stationary devices and vehicle-mounted systems.

The Sector also to include this item as a “carryover item” on the Sector's 2020 agenda so that proposed changes to reformat this reference as a checklist item; remove the note; and add check boxes can be considered by the Sector.

2020 MS Meeting Discussion:

Now that the new paragraph S.2.5. Zero-Set-Back Interlock, Stationary and Vehicle Mounted Meters, Electronic is effective, this note needs to be removed and a new checklist item created to reference the new S.2.5. and to reflect the renumbering and retitling of the prior paragraph titled “S.2.5. Zero-Set-Back-Interlock” to the title of “S.2.6. Zero-Set-Back Interlock for Stationary Retail Motor-Fuel Devices.” Proposed changes to the checklist for the Sector's consideration are shown in Appendix E.

During the 2020 MS Meeting, the members discussed extensively the differences between time out for set back and time out for transactions. There were several manufacturers that disagreed with the 2-minute requirement for Zero Setback. Mr. Dmitri Karimov (Liquid Controls, LLC), Mr. Hathaway, and Mr. Miller promote the concept to change to 3 minutes. Mrs. Butcher discussed the WWMA Agenda Item that discusses transaction time-out and distributed a copy of the new proposals via email. Mr. Flocken stated that the item being discussed is now a NIST HB 44 specification and therefore should be included into NCWM Pub. 14. Mr. Flocken and Mr. Keilty described the need for diligence to ensure uniformity between the requirements and type test procedures.

The members agreed to add the wording shown in Appendix E to the 2021 edition of NCWM Pub. 14.

4. Magnetic Flow Meters – NCWM Pub 14 Technical Policy and Test Procedures

Background/Discussion:

This item was added as a “walk-on” item during the Sector Meeting in response to a request from the NTEP Evaluating Laboratories and Sector Chairman Keilty.

Mr. Keilty introduced the item, noting that more definitive criteria is needed in NCWM Pub 14 to address magnetic flow meters. NCWM Pub. 14 includes some criteria in a new Section M. which was added to the Field Evaluation and Permanence Test Section of the LMD Checklist last year. However, there isn’t a lot more in the overall checklist. Some laboratories have questioned whether there is an adequate amount of information in the checklist for evaluating these devices, particularly since NTEP has not evaluated a large number of them.

Mrs. Butcher suggested the Sector begin by considering how to close the gap created by the “exception” in the title of Section M. “Initial Evaluation and Permanence Tests for Magnetic Flow Meters and Ultrasonic Meters (Other Than Vehicle-Mounted and Retail-Motor-Fuel Applications)” For example, the Sector might consider adding a statement such as “For Vehicle-Mounted Magnetic Flow Meters and Vehicle-Mounted Ultrasonic Meters, use the field and permanence test requirements found in Section C.” A similar statement might be considered to address meters used in RMFD applications; for example, “For magnetic flow meters and ultrasonic meters used in Retail Motor-Fuel Applications, use the field and permanence test requirements found in Section A.” If these criteria aren’t appropriate, then the Sector should discuss what criteria are appropriate and specify this in the field and permanence test criteria. Mrs. Butcher suggested a small work group be formed to review these issues and provide suggestions for the Sector to consider and the Sector concurred.

The Sector also acknowledged similar concerns about whether Pub 14 includes clear criteria for addressing all applications of ultrasonic meters. The Sector recognized this is an issue that may need to be addressed at some point, including elaborating on the checklist criteria, and addressing the technology in the Product Families Table. In the meantime, there is nothing that precludes the submission and evaluation of ultrasonic metering applications.

Mr. Keilty also questioned why a previously included category of “normal liquids” category no longer appears in the Product Families Table and questioned whether it was inadvertently eliminated. Sector Technical Advisor, Tina Butcher, referenced the 2006 Measuring Sector Summary during which the Sector agreed to add the criteria and column to Pub 14 to address magnetic flow meters. The two separate tests listed in today’s (2019) edition under this category were added at that time. Thus, the current separate “tests” were intentional. This doesn’t mean the criteria cannot be revisited; however, the current references were not the result of a mistake in the editing of the table and the Sector would need to review the item and past when considering consider how or if to propose redefining the testing.

Mr. Keilty questioned whether there is a need for something specific that states ultrasonic and magnetic flow meters. Sector Technical Advisor Tina Butcher noted there is no specific language in NIST HB H44 that references magnetic flow meters since HB 44 is not design-specific. Type evaluation criteria are established based on H44. In the case where NTEP begins looking at a different technology than has been evaluated before, it is necessary to establish minimum amounts of testing. In the past, NTEP has typically started with stating a number of tests over what range of conditions. For different technologies, NTEP may look at the need to test under different conditions based on the technology of the device and how the technology is affected by certain characteristics of the product being measured such as viscosity. As NTEP gets applications for technologies that haven’t been dealt with before in NTEP evaluations, it is necessary to ensure specifics are established in the checklist for permanence testing and relevant code references are identified and specified in appropriate sections of the Pub 14 checklist.

The Sector discussed questions of: What are the gaps in the checklist right now? Do we add (in addition to the new Section M added to the field and permanence tests section in 2018) a section to include “Magnetic Flow Meters” criteria or do we reference existing sections with instructions such as “for magnetic flow meters, use the procedures and checklist criteria found in section x?”

The Sector also needs to look at the Product Families Table as it pertains to magnetic flow meters to ensure we can minimize the amount of testing needed to demonstrate confidence in the device and its performance. In general, manufacturers describe the maximum conductivity for products measured by a magnetic flow meter. For

hydrocarbons a conductivity is not typically specified. For organics, one may find values specified. The Sector set the criteria for “Test F” and “Test D.”

For many products, conductivity values aren’t available and, therefore, not specified in the table. Mr. Keilty commented he doesn’t recall the language in the “Test D” criteria to be what was to be added.

Mr. John Roach (California, Department of Measurement Services, NTEP Lab) noted he raised questions in the past year regarding how milk fits into the existing Product Families table, particularly for a magnetic flow meter. Does this product qualify as a beverage with regard to the table? Is its conductivity different from that of the products covered in the product category of “water?” Does milk fit into an established product category or should another category specifically for “milk” be added? Mr. Keilty also noted a question arose regarding if “sludge” would fall in the table. NTEP Director Flocken noted sludge would likely have some conductivity, but it is unclear how much conductivity it would have or how the conductivity would vary in the product.

The Sector agreed a small work group might be appropriate to address these issues surrounding the Product Families table and this might be the same group proposed for reviewing the mass flow meter and ultrasonic meter criteria.

Decisions: The Sector established a small work group to take on a set of tasks related to refining type evaluation criteria for magnetic flow meters. The work group consists of the following:

- Mr. Marc Buttler
- Mr. Allen Katalinic
- Mr. Michael Keilty
- Mr. Randy Ramsey
- Mr. John Roach

The work group is asked to review NCWM Pub 14 and complete the following tasks and bring recommendations for changes to Pub 14 back to the Sector for review at its 2020 annual meeting:

- Identify how to close the gaps created by the exceptions in the title of “Section M. Initial Evaluation and Permanence Tests for Magnetic Flow Meters and Ultrasonic Meters (Other Than Vehicle-Mounted and Retail-Motor-Fuel Applications)”
- Review other sections of NCWM Pub. 14 to ensure there are adequate criteria to address magnetic flow meters and their applications.
- Make recommendations on how to best address the gaps, including referencing other existing sections of the checklist or creating new language to be considered by the Sector.
- Review the criteria and tests specified for magnetic flow meters in Product Families to determine if changes are needed and, if so, make recommendations on what those changes should be.

2020 MS Meeting Discussion

During the 2020 MS Meeting, MS. Chair Keilty reviewed the work groups recommendation for changes to the 2021 edition of NCWM Pub. 14 with the MS members. The members agreed to all recommendations made by the work group. The recommendations are shown below.

In addition, an editorial error of the numbering at the beginning of LMD-1A was identified. The error is that the paragraphs are numbered with “11” and “12” and it should be “1” and “2.” The correction will be made in the 2021 edition of Pub 14.

The members also recognized that there is a Milk Meter Task Group developing changes to the Milk Meter Code in NIST Handbook 44. It was suggested that the members of the task group be informed of the addition of “milk” to the

product family. Mr. Manheim is a technical advisor to the task group and was asked to forward this change to its members.

The group began discussing the omission of milk from the Product Family Table. This discussion led to several recommendations:

- 1) The group recommends that Milk be added to the Magnetic Flowmeter column of the Pub 14 Product Family Table under Test D below Juices. The conductivity of Milk will be listed as 4 to 7 $\mu\text{S}/\text{cm}^3$.
- 2) The group recommends that the verbiage in Test D be modified to say:
 - a. **Test D**
To obtain coverage for a product category, test with one product in the product category. To cover a range of the following products, test one product having a specified conductivity. The Certificate of Conformance will cover all products in the product category all product categories **listed in the Table under Test D.**
 - b. Test D does not apply to product categories of pure alcohols, pure glycols, ~~pure water~~, solvents chlorinated, solvents general, fuels, lubricants, industrial and food grade liquid oils.

The group discussed the listing of “parameters” on the Certificate of Conformance. The group recommends that the verbiage in NCWM Pub. 14 (2020) LMD-1 A. Type Evaluation Test Location, Installations Criteria and Certificate of Conformance Information under “The CC should include the following information:” be modified to say:

- 1) Approved ranges and parameters (flow rates, viscosity / specific gravity / conductivity, product family or families, sizes of meter, minimum measured quantity)
- 2) It was also pointed out that there is a number error under Section A. The paragraph numbers 11. and 12. Should be corrected to read 1. and 2.

The group discussed a situation which arose during a type evaluation of a vehicle mounted milk metering system. The discussion led to several recommendations:

- 1) Pub. 14 (2020) LMD-92 – 40. Additional Checklists and Test Procedures for Milk Meters.
 - a. Add
Code Reference: N.1 Test Liquid ---- Milk Meters Code (Milk Meters Code Reference)
(b) A milk measuring system shall be tested with the type of milk to be measured when the accuracy of the system is affected by the characteristics of the milk (e.g., positive displacement meters).
Note: Mixing may be required.
- 2) Pub. 14 (2020) LMD-129 – M. Initial Evaluation and Permanence Tests for Magnetic Flow Meters and Ultrasonic Meters (Other Than Vehicle-Mounted and Retail-Motor-Fuel Applications)
 - a. Add
Note: For Vehicle-Mounted Magnetic Flow Meters and Vehicle-Mounted Ultrasonic Meters, use the field and permanence test requirements found in Section C. For Retail Motor-Fuel Magnetic

Flow Meters and Retail Motor-Fuel Ultrasonic Meters, use the field and permanence test requirements found in Section A.

New Items:

5. Proposal to change S.3. Markings of the Water Meter Code, Proposal Submitted to the S&T Committee

Source:

Mr. Clark Clooney (California Department of Food and Agriculture, Division of Measurement Standards)

The California Department of Measurement Standards has submitted the proposal, shown below, to the Regional Weights and Measures Association for possible inclusion into the National S&T Committee Agenda. California has asked for this item to be added to the meeting agenda as a general discussion item.

NTEP 2020 – 2021 Final Report
Appendix D – 2020 – 2021 Measuring Sector Summary

General Information			
1. Date: 08/06/2019		2. Regional Association(s): (Not applicable for proposals to the Board of Directors or NTEP Committee) <input checked="" type="checkbox"/> Central (CWMA) <input checked="" type="checkbox"/> Northeastern (NEWMA) <input checked="" type="checkbox"/> Southern (SWMA) <input checked="" type="checkbox"/> Western (WWMA)	
3. Standing Committee: Laws & Regulations <input checked="" type="checkbox"/> Specifications & Tolerances <input type="checkbox"/> Professional Development <input type="checkbox"/> Board of Directors <input type="checkbox"/> NTEP Committee			
4. Submitter's Name: Clark Cooney		Submitter's Organization: California Department of Food and Agriculture, Division of Measurement Standards	
5. Address: 6790 Florin Perkins Road, Suite 100			
6. City: Sacramento	7. State: CA	8. Zip Code: 95828-1812	9. Country: USA
10. Phone Number: 916-229-3000		11. Fax Number: 916-229-3055	12. Email Address: clark.cooney@cdfa.ca.gov
Proposal Information			
13. Purpose: Concise statement as to the intent or purpose of this proposal, such as problem being fixed. (Do not include justification here.) Adding meter size and water flow direction indication marking requirements to NIST Handbook 44, Section 3.36. Water Meters S.3. Markings.			
14. Document to be Amended: <input checked="" type="checkbox"/> NIST Handbook 44 <input type="checkbox"/> NIST Handbook 130 <input type="checkbox"/> NIST Handbook 133 <input type="checkbox"/> NCWM Guidance Document <input type="checkbox"/> NCWM Bylaws <input type="checkbox"/> NTEP Administrative Policy			
15. Cite portion to be Amended: Please file a separate Form 15 for each code, model law or regulation to be amended. NIST Handbook 44, Section: 3.36. Water Meters, Specifications S.3. Markings.			
16. Proposal: Please use strikeout to show words to be deleted and <u>underline</u> to show new words. (Do not use track changes.) Add subparagraph: <u>S.3.2. Meter Size and Directional Flow Marking Information. A water meter shall be clearly and indelibly marked with the following information:</u> <u>(a) meter size on the indicator face plate; and</u> <u>(b) water flow direction designated by an arrow cast or stamped into the body of the meter.</u>			
17. Justification: Please include national importance, background on the issue, and reference to supporting data or documents. Meter size must be identified to select the suitable device for the application. (NIST H-44 G-UR.1. Selection Requirements.) Water flow direction must be identified to help ensure the device is installed correctly. (NIST H-44 G-UR.2. Installation Requirements.)			
18. Possible Opposing Argument's: Please demonstrate that you are aware and have considered possible opposition. The proposed amendments, if adopted, would require additional marking and may impact manufacturing processes.			
19. Requested Action if Considered for NCWM Agenda: <input checked="" type="checkbox"/> Voting Item <input type="checkbox"/> Developing Item <input type="checkbox"/> Informational Item <input type="checkbox"/> Other (Please Describe):			
20. List of Attachments: None			

2020 MS Meeting Discussion

Members of the MS agreed that the meter size information was needed for type evaluation and enforcement. One water meter manufacturer described two differing meter technologies that his company makes that look the same but are actually different sizes. He marks those meter sizes on the dial or on the meter body. That manufacturer stated that the AWWA standards require the marking of meter size. The direction of flow arrow is needed for correct installation and testing purposes.

As this was provided as an informational item, the MS offers no comments.

6. Proposal to change UR.3.3. of the Mass Flow Meter Code, Submitted to the S&T Committee

Source:

Mr. Andrew Burke (Restaurant Technologies, Inc.)

The following proposal, shown below, was submitted to the Regional Weights and Measures Association for possible inclusion into the National S&T Committee Agenda. It is included here as information and possible discussion.

General Information			
1. Date: 4/14/2020		2. Regional Association(s): (Not applicable for proposals to the Board of Directors or NTEP Committee) <input checked="" type="checkbox"/> Central (CWMA) <input checked="" type="checkbox"/> Northeastern (NEWMA) <input checked="" type="checkbox"/> Southern (SWMA) <input checked="" type="checkbox"/> Western (WWMA)	
3. Standing Committee: <input type="checkbox"/> Laws & Regulations <input checked="" type="checkbox"/> Specifications & Tolerances <input type="checkbox"/> Professional Development <input type="checkbox"/> Board of Directors <input type="checkbox"/> NTEP Committee			
4. Submitter's Name: Andrew Burke		Submitter's Organization: Restaurant Technologies, Inc.	
5. Address: 2250 Pilot Knob Road, Suite 100			
6. City: Mendota Heights	7. State: MN	8. Zip Code: 55120	9. Country: USA
10. Phone Number: (612) 469-9629		11. Fax Number:	12. Email Address: aburke@rti-inc.com
Proposal Information			
13. Purpose: Concise statement as to the intent or purpose of this proposal, such as problem being fixed. (Do <u>not</u> include justification here.) Allow customers the option of receiving a digital ticket (emailed) in lieu of a printed ticket at time of delivery.			
14. Document to be Amended: <input checked="" type="checkbox"/> NIST Handbook 44 <input type="checkbox"/> NIST Handbook 130 <input type="checkbox"/> NIST Handbook 133 <input type="checkbox"/> NCWM Guidance Document <input type="checkbox"/> NCWM Bylaws <input type="checkbox"/> NTEP Administrative Policy			
15. Cite portion to be Amended: Please file a separate Form 15 for each code, model law or regulation to be amended. Section 3.37, paragraph UR.3.3.			
16. Proposal: Please use strikeout to show words to be deleted and <u>underline</u> to show new words. (Do <u>not</u> use track changes.) Change Section 3.37, paragraph UR.3.3 to read as follows: UR.3.3. Ticket Printer: Customer Ticket. – Vehicle-mounted metering systems shall be equipped with a ticket printer. A copy of the ticket issued by the device shall be left with the customer at the time of delivery or as otherwise specified by the customer. <u>For systems equipped with the capability of issuing an electronic receipt, ticket, or other recorded representation, the customer may be given the option to receive any required information electronically (e.g., via email, cell phone, website, etc.) in lieu of a hard copy.</u>			
17. Justification: Please include national importance, background on the issue, and reference to supporting data or documents. 1) Our customers are requesting receipt of delivery ticket via email. 2) We deliver bulk cooking oil to restaurants, often during non-operating hours. When nobody from the restaurant is present to receive the delivery ticket, it is stuck in or taped to the back door, and often ends up lost. Our customers are requesting that we do not leave a hard copy behind.			

<p>3) All of our sales are private contract sales; we do not sell to the public. Therefore, the need for a hard copy delivery ticket is not as critical as would be in a public sale setting.</p> <p>4) In addition to electronic receipts, our customers are granted access to a website that shows their daily usage of cooking oil and contains direct links to electronic delivery tickets. This website will allow the customer to view all of their delivery tickets to date and is in addition to the emailed delivery ticket.</p> <p>5) Our metering system is NTEP certified and in full compliance of Handbook 44. All required delivery ticket content, per Section 3.37, is captured in electronic format.</p> <p>Language similar to what is being proposed above was added in 2014 to Section 1.10, Paragraph G-S.5.6 in an attempt to allow electronic delivery tickets. While this change was intended to apply to all sections of the code, it conflicts with existing language in the General Code (ref. Code Application, G-A.2) that does not allow the language in the General Code to supersede the requirements of the specific code. So in the case of Section 3.37, the code language requiring a hard copy ticket takes precedent.</p>
<p>18. Possible Opposing Argument's: Please demonstrate that you are aware and have considered possible opposition.</p>
<p>Assuming no arguments as this proposal is similar, in language and intent, to what was added in 2014 to Section 1.10, Paragraph G-S.5.6.</p>
<p>19. Requested Action if Considered for NCWM Agenda:</p>
<p><input checked="" type="checkbox"/> Voting Item <input type="checkbox"/> Developing Item <input type="checkbox"/> Informational Item <input type="checkbox"/> Other (Please Describe):</p>
<p>20. List of Attachments:</p>
<p> </p>

2020 MS Meeting Discussion

Members of the sector reviewed the LMD VTM LPG and MFM requirements for printed receipts as well as G-S.5.6. It was noted that no User Requirements are in NCWM Pub. 14 as these are system requirements that are verified at the point of installation. Sector asked that the S&T consider that the same language is unified as currently exists in other codes. The members also suggested that the submitter should consider revising the proposed language to avoid the conflict with the 1st sentence of UR. 3.3.

Group noted that there is a new proposal in the HGM code. Group noted that a hard copy should be available if the customer wants it.

7. Proposal to change S.2.2. of the Water Meter Code, Submitted to the L&R Committee

Source:

Mr. Moises Sztajnwores (TREXUS Corp.)

The following proposal, shown below, was submitted to the Regional Weights and Measures Association for possible inclusion into the National L&R Committee Agenda. It is included here as information and possible discussion.

General Information				
1. Date:	2. Regional Association(s): (Not applicable for proposals to the Board of Directors or NTEP Committee)			
02/10/2020	<input checked="" type="checkbox"/> Central (CWMA) <input checked="" type="checkbox"/> Northeastern (NEWMA) <input checked="" type="checkbox"/> Southern (SWMA) <input checked="" type="checkbox"/> Western (WWMA)			
3. Standing Committee:				
<input checked="" type="checkbox"/> Laws & Regulations <input type="checkbox"/> Specifications & Tolerances <input type="checkbox"/> Professional Development <input type="checkbox"/> Board of Directors <input type="checkbox"/> NTEP Committee				
4. Submitter's Name:		Submitter's Organization:		
Moises Sztajnworc		TREXUS CORP.		
5. Address:				
10305 NW 41Street Unit 223				
6. City:		7. State:		8. Zip Code:
DORAL		FL		33178
9. Country:				
USA				
10. Phone Number:		11. Fax Number:		12. Email Address:
305-363 5944				msb@waterprofit.com
Proposal Information				
13. Purpose: Concise statement as to the intent or purpose of this proposal, such as problem being fixed. (Do not include justification here.)				
Amend Section 3.2.2.1 by including water meters measure system				
14. Document to be Amended:				
<input checked="" type="checkbox"/> NIST Handbook 44 <input type="checkbox"/> NIST Handbook 130 <input type="checkbox"/> NIST Handbook 133 <input type="checkbox"/> NCWM Guidance Document <input type="checkbox"/> NCWM Bylaws <input type="checkbox"/> NTEP Administrative Policy				
15. Cite portion to be Amended: Please file a separate Form 15 for each code, model law or regulation to be amended.				
Section: 3.36 Water Meters Paragraph: S.2.2.				
16. Proposal: Please use strikeout to show words to be deleted and <u>underline</u> to show new words. (Do not use track changes.)				
<p>S.2.2. Batching Measuring Systems Only <u>Air/Vapor Elimination.</u></p> <p>S.2.2.1. Air/Vapor Elimination, Batching Measuring Systems Only. – <u>Water meters and Batching</u> measuring systems shall be equipped with an effective air/vapor eliminator or other automatic means to prevent the passage of air/vapor through the meter. Vent lines from the air/vapor eliminator shall be made of appropriate non-collapsible material. (Amended 2017 and 20XX)</p> <p>S.2.2.2. Directional Flow Valves. – Valves intended to prevent reversal of flow shall be automatic in operation.</p>				
17. Justification: Please include national importance, background on the issue, and reference to supporting data or documents.				
Failure of water meters is demonstrated by not discriminating air from water. The water meter does not count in a similar way a turbulent fluid to a laminar fluid; therefore, the measurement is not realistic and the consumer has to pay for the air that the meter counts and not for the water.				
18. Possible Opposing Argument's: Please demonstrate that you are aware and have considered possible opposition.				
Hydraulic engineers argue that when transporting a fluid through a pipeline this generates turbulence due to the atmosphere, therefore air bubbles are generated in the system. This argument is physically acceptable, however the technology shows that the measurement is unrealistic and when compressing the air that passes through the counter				

avoid wrong measurement so the consumer will not have to pay for the air that will evaporate when using the Water, he will only pay for the water consumed.
19. Requested Action if Considered for NCWM Agenda:
<input checked="" type="checkbox"/> Voting Item <input type="checkbox"/> Developing Item <input type="checkbox"/> Informational Item <input type="checkbox"/> Other (Please Describe):
20. List of Attachments:
White Paper technically explaining the measurement error, Water Bill before and after installed the corrective Explanatory videos demonstrating the measurement error.

2020 MS Meeting Discussion

Members of the MS did not see the need to make this requirement for water meters other than for batching water meters because there wasn't a clear problem with submetering and residential meters where the lines are always flooded. The proposal Justification and Opposing Arguments sections of the Form 15 might be describing a flow conditioner rather than the use of a traditional air/vapor elimination device.

8. Changes to Security for Retail Motor-Fuel Devices

Background:

At its 2020 Annual Meeting, the NCWM adopted changes to the following paragraphs in the LMD Code in NIST Handbook 44. This item was considered on the S&T Committee's Agenda under Item LMD 19.1.

The purpose of this item is to prevent access and tampering by unauthorized persons to any area of the device where electronic financial transactions occur, credit card information is obtained, and or personal information is stored or transmitted.

UR.4.2. Security for Retail Motor-Fuel Devices (RMFD). Any retail motor fuel device capable of conducting customer initiated electronic financial transactions must be secured to substantially restrict the ability of unauthorized persons to manipulate it to obtain payment information that could be used to commit fraud. The following is a non-exhaustive list of ways that restriction of such manipulation may be accomplished:

(a) A physical lock, locking device, or a physical securing device that will restrict access to the electronic financial transaction compartment of the RMFD. A lock, locking device or securing device shall not be manipulated with commonly available tools. A lock shall not allow the use of a universal key. A universal key is a key that is readily available in the market or can be easily purchased in a hardware or common retail store. A single non-universal key for all of the like devices at a retail facility or for all of the like devices at a chain of retail facilities is acceptable or;

(b) Electronic alarming or disabling of the equipment if unauthorized access is attempted or;

(c) Advanced payment acceptance technologies that increase protections against the theft of payment information itself or do not allow access to such information in a form that may be used to commit fraud or;

(d) Another security solution that has been approved by the local or state weights and measures jurisdiction with authority.

(Added, 20XX)

NTEP Administrators Suggested Change to Publication 14:

Seeing that this is a User requirement and NTEP does not evaluate devices to User Requirements, no additional action is required by the Measuring Sector.

2021 MS Meeting Discussion:

During the 2021 MS Meeting, Mr. Keilty opened the item up for discussion. Mr. Flocken discussed this item, since NTEP does not evaluate User Requirements (UR) the item does not need to be added. MS members agreed to not add the UR to Pub 14.

Mr. Keilty asked for further comments with no more comments. Mr. Keilty found this item to be complete. This item is considered closed and will not appear on the 2022 meeting agenda.

9. Increase the Automatic Timeout at Pay-At-Pump Retail Motor-Fuel Devices

Background:

At its 2020 Annual Meeting, the NCWM adopted changes to the following paragraphs in the LMD Code in NIST Handbook 44. This item was considered on the S&T Committee's Agenda under Item LMD-20.2 and are shown in the table below for reference.

The purpose of this item is to allow additional time to automatic timeout on retail motor fuel dispensers, as conditions may warrant.

***S.1.6.10. Automatic Timeout – Pay-At-Pump Retail Motor-Fuel Devices.** – Once a device has been authorized, it must de-authorize within three minutes ~~two minutes~~ if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than three minutes ~~two minutes~~.*

[Nonretroactive as of January 1, 2017]

(Added 2016)

NTEP Administrators Suggested Change to Publication 14:

Page LMD-91 (2021 edition of Pub 14) make the following changes to the automatic timeout value.

Code Reference: G-S.2. Facilitation of Fraud and LMD Code S.1.6.10. Automatic Timeout - Pay-at-Pump for Retail Devices.

There is great concern regarding the potential for accidental or intentional fraud when card-activated systems are used in service stations, especially because bank-card-activated systems give direct access to bank accounts.

A card-activated system shall authorize the dispensing of product for not more than two three minutes of the time between authorization and "handle on" at the dispenser. Additionally, once a device has been authorized, it must de-authorize within two minutes if not activated. It shall properly record transactions on the appropriate card account.

When a card-activated system is subjected to power loss of greater than 10 seconds, the dispenser shall deauthorize. Because systems may be installed with separate power lines to the console, card reader, and dispenser, to different parts of the system should be tested with power failures to evaluate the potential for accidental or intentional errors. The appropriate device response depends upon when the power loss occurs during the delivery sequence.

39.1. The dispenser must de-authorize in not more than ~~two~~ three ☐ Yes ☐ No ☐ N/A minutes if the pump "handle" is not turned on.

39.2. The dispenser must be de-authorized in not more than ~~two~~ three ☐ Yes ☐ No ☐ N/A minutes if not activated.

39.3. If the time limit to de-authorize a dispenser is programmable, it ☐ Yes ☐ No ☐ N/A shall not accept an entry greater than two minutes.

39.4. When a power loss greater than 10 seconds occurs after the pump ☐ Yes ☐ No ☐ N/A "handle" is on, the dispenser must de-authorize.

39.5. When there is a loss of power, but the pump "handle" is not on, ☐ Yes ☐ No ☐ N/A
the dispenser must de-authorize in not more than three minutes.

2021 MS Meeting Discussion

During the 2021 MS Meeting, Mr. Keilty opened the item up for discussion. After a review of the item and discussion a few errors were found in the item. Please see below for the corrected items.

It was also noted that the Code reference: G-S.2. in LMD-88 Chapter 38 is incorrect.

Mr. Keilty asked for any other comments. The attending members agreed with the proposed recommendations to change Pub 14 as shown below. Mr. Keilty then asked to consider this item complete once above changes are made.

Page LMD-91 (2022 edition of Pub 14) make the following changes.

Code Reference: G-S.2. Facilitation of Fraud and LMD Code S.1.6.10. Automatic Timeout-Pay-at-Pump for Retail Devices.

There is great concern regarding the potential for accidental or intentional fraud when card-activated systems are used in service stations, especially because bank-card-activated systems give direct access to bank accounts.

A card-activated system shall authorize the dispensing of product for not more than ~~two~~ three minutes of the time between authorization and "handle on" at the dispenser. Additionally, once a device has been authorized, it must de-authorize within ~~two~~ three minutes if not activated. It shall properly record transactions on the appropriate card account.

When a card-activated system is subjected to power loss of greater than 10 seconds, the dispenser shall deauthorize. Because systems may be installed with separate power lines to the console, card reader, and dispenser, to different parts of the system should be tested with power failures to evaluate the potential for accidental or intentional errors. The appropriate device response depends upon when the power loss occurs during the delivery sequence.

39.3. The dispenser must de-authorize in not more than ~~two~~ three ☐ Yes ☐ No ☐ N/A
minutes if the pump "handle" is not turned on.

39.4. The dispenser must be de-authorized in not more than ~~two~~ three ☐ Yes ☐ No ☐ N/A
three minutes if not activated.

39.5. If the time limit to de-authorize a dispenser is programmable, ☐ Yes ☐ No ☐ N/A
it shall not accept an entry greater than ~~two~~ three.

39.6. When a power loss greater than 10 seconds occurs after the ☐ Yes ☐ No ☐ N/A
pump "handle" is on, the dispenser must de-authorize.

39.7. When there is a loss of power, but the pump "handle" is not on, ☐ Yes ☐ No ☐ N/A
the dispenser must de-authorize in not more than three minutes.

Page LMD-88 (2022 edition of Pub 14) make the following changes.

Code Reference: G-S.2. Facilitation of Fraud and MFM Code S.2.~~89~~. Automatic Timeout - Pay-at-Vehicle Fuel Dispensers.

10. Changes to the Zero-Set-Back Interlock and Automatic Timeout for LPG and Anhydrous Ammonia Liquid-Measuring Devices

Background:

At its 2020 Annual Meeting, the NCWM adopted changes to the following paragraphs in the LPG Code in NIST Handbook 44. This item was considered on the S&T Committee's Agenda under Item LPG 20.1 and are shown in the table below for reference.

The purpose of this item is to reformat the requirements for zero-set-back interlock and time-out features for clarity and consistency in the LPG code to align the format with other measuring devices codes.

S.2.5. Zero-Set-Back Interlock, ~~Stationary and Vehicle Mounted Meters, Electronic.~~

S.2.5.1. Zero-Set-Back Interlock, Electronic Stationary Meters (Other than Stationary Retail Motor-Fuel Dispensers) and Electronic Vehicle-Mounted Meters, Electronic. - A device shall be so constructed so that after an individual delivery or multiple deliveries at one location have been completed, an automatic interlock system shall engage to prevent a subsequent delivery until the indicating element and, if equipped, recording element have been returned to their zero position. ~~For individual deliveries, if there is no product flow for two minutes the transaction must be completed before additional product flow is allowed. The 2-minute timeout shall be a sealable feature on an indicator.~~

[Nonretroactive as of 2021]

(Added 2019) (**Renumbered and Amended 2020 2021**)

S.2.6. Automatic Timeout.

S.2.6.1. Electronic Stationary (Other than Stationary Retail Motor-Fuel Dispensers) and Electronic Vehicle-Mounted Meters, ~~Electronic.~~ For individual deliveries, if there is no product flow for three minutes the transaction must be completed before additional product flow is allowed. The three-minute timeout shall be a sealable feature on an indicator.

[Nonretroactive as of 2021]

(Added 2020 2021)

NTEP Administrators Suggested Change to Publication 14:

Page LMD-75 (2021 edition of Pub 14) make the following changes to the Zero-Set-Back Interlock.

The zero-set-back interlock on a dispenser is critical to prevent fraudulent practices. A retail motor fuel device shall have an effective automatic interlock such that once the dispenser shuts off, it cannot be restarted without resetting the indicating element to zero. This requirement also applies to the recording element if one is present. The dispenser shall be designed so that the starting lever must be in the shut-off position and the interlock engaged before the discharge nozzle can be returned to its designed hanging position. If a single pump supplies more than one dispenser, then each dispenser shall have an automatic control valve that prevents product from being delivered by a dispenser until its indications have been set to zero.

Note that the following NIST Handbook 44 requirement becomes non retroactively effective as of 2021. NTEP evaluators and manufacturers must be cognizant of the approaching requirement, especially for evaluations conducted as 2021 approaches.

S.2.5. Zero-Set-Back Interlock, ~~Stationary and Vehicle Mounted Meters, Electronic.~~

S.2.5.1. Zero-Set-Back Interlock, Electronic Stationary Meters (Other than Stationary Retail Motor-Fuel Dispensers) and Electronic Vehicle Mounted Meters, Electronic. - A device shall be so constructed so that after an individual or multiple deliveries at one location have been completed, an automatic interlock system shall engage to prevent a subsequent delivery until the indicating and, if equipped, recording elements have been returned to their zero position. ~~For individual deliveries, if there is no product flow for two minutes the transaction must be completed before additional product flow is allowed. The 2-minute timeout shall be a sealable feature on an indicator.~~

(Added 2020) (Nonretroactive as of 2021)

(Added 2019) (Renumbered and Amended 2020 2021)

29.5. After the device is turned off by moving the lever that stops the flow, a subsequent delivery shall be prevented until the indicators (and recording element if present) have returned to their correct zero positions. ☐ Yes ☐ No ☐ N/A

29.6. The starting lever shall be in shut off position and zero-set-back interlock engaged before the nozzle can be returned to its designed hanging position. That is any position where the tip of the nozzle is placed in its designed receptacle and the lock can be inserted. ☐ Yes ☐ No ☐ N/A

29.7. If more than one dispenser is connected to a single pump, an automatic control valve shall prevent fuel from being delivered until the indicating elements have been returned to their correct zero position and engaged. ☐ Yes ☐ No ☐ N/A

29.8. The use of the interlock shall be effective under all conditions when any control on the console, except a system emergency shut-off, is operating and after any momentary power failure. ☐ Yes ☐ No ☐ N/A

S.2.65.2. Zero-Set-Back Interlock for Stationary Retail Motor-Fuel Devices. – A device shall be constructed so that:

Code Reference: S.2.6. Automatic Timeout

S.2.6.1. Electronic Stationary (Other than Stationary Retail Motor-Fuel Dispensers) and Electronic Vehicle-Mounted Meters, Electronic

[Nonretroactive as of ~~2021~~ 2022]

(Added ~~2020~~ 2021)

29.9. For individual deliveries, if there is no product flow for three minutes the transaction must be completed before additional product flow is allowed. ☐ Yes ☐ No ☐ N/A

29.10. The three-minute timeout shall be a sealable feature on an indicator. ☐ Yes ☐ No ☐ N/A

S.2.6.2. Automatic Timeout Pay-at-Pump Retail Motor-Fuel Devices

[Nonretroactive as of ~~2021~~ 2022]

(Added ~~2020~~ 2021)

29.11. Once a device has been authorized, it must de-authorize within ~~two~~ three minutes if not activated. ☐ Yes ☐ No ☐ N/A

29.12. Re-authorization of the device must be performed before any product can be dispensed. ☐ Yes ☐ No ☐ N/A

29.13. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than ~~two~~ three minutes. ☐ Yes ☐ No ☐ N/A

Renumber existing sections

2021 MS Meeting Discussion:

During the 2021 MS Meeting, Mr. Keilty opened the item up for discussion. After a review of the item and discussion a few changes to the items were proposed. Please see below for the discussed item changes. Mr. Keilty asked for any other comments. The attending members agreed with the proposed recommendations to change Pub 14 as shown below. Mr. Keilty then asked to consider this item closed once below changes are made.

Page LMD-75 (2021 edition of Pub 14) make the following changes.

Code Reference: S.2.5. Zero-Set-Back Interlock, ~~Stationary and Vehicle Mounted Meters, Electronic.~~

The zero-set-back interlock on stationery and vehicle-mounted meters is critical to prevent fraudulent practices. These devices shall have an effective automatic interlock such that, after either individual or multiple deliveries at one location have been completed and the device is shut off, it cannot be restarted without resetting the indicating element to zero. This requirement also applies to the recording element if one is present.

Additionally, for individual deliveries, devices are required to be designed such that, if there is no product flow for two minutes, the transaction must be completed before additional product flow is allowed. Particularly for vehicle-mounted systems, this helps to prevent the vehicle from being moved to another location and product being delivered into a different receiving tank that does not belong to the original customer. The 2-minute timeout shall be a sealable feature on an indicator.

Code Reference: S.2.5.1. Zero-Set-Back Interlock Electronic Stationary Meters (Other than Stationary Retail Motor-Fuel Dispensers) and Electronic Vehicle-Mounted Meters, Electronic.

S.2.5. Zero Set Back Interlock, Stationery and Vehicle Mounted Meters, Electronic. – A device shall be so constructed so that after an individual or multiple deliveries at one location have been completed, an automatic interlock system shall engage to prevent a subsequent delivery until the indicating and, if equipped, recording elements have been returned to their zero position. ~~For individual deliveries, if there is no product flow for two minutes the transaction must be completed before additional product flow is allowed. The 2 minute timeout shall be a sealable feature on an indicator.~~

29.5. Stationary and vehicle-mounted meters shall have an effective automatic interlock such that, after either individual or multiple deliveries at one location have been completed and the device is shut off, it cannot be restarted without resetting the indicating element to zero.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
29.6. This requirement also applies to the recording element if one is present.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
29.7. For individual deliveries, if there is no product flow for two minutes, the transaction must be completed before additional product flow is allowed.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
29.8. The 2 minute timeout shall be a sealable feature on an indicator.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Code Reference: S.2.65.2. Zero-Set-Back Interlock for Stationary Retail Motor-Fuel Devices.

The zero-set-back interlock on a dispenser is critical to prevent fraudulent practices. A retail motor fuel device shall have an effective automatic interlock such that once the dispenser shuts off, it cannot be restarted without resetting the indicating element to zero. This requirement also applies to the recording element if one is present. The dispenser shall be designed so that the starting lever must be in the shut-off position and the interlock engaged before the discharge nozzle can be returned to its designed hanging position. If a single pump supplies more than one dispenser, then each dispenser shall have an automatic control valve that prevents product from being delivered by a dispenser until its indications have been set to zero.

29.7. The dispenser shall have an effective automatic interlock such that once the dispenser shuts off, it cannot be restarted without resetting the indicating element to zero. ☐ Yes ☐ No ☐ N/A

29.8. This requirement also applies to the recording element if one is present. ☐ Yes ☐ No ☐ N/A

29.9. After the device is turned off by moving the lever that stops the flow, a subsequent delivery shall be prevented until the indicators (and recording element if present) have returned to their correct zero positions. ☐ Yes ☐ No ☐ N/A

29.10. The starting lever shall be in shut off position and zero-set-back interlock engaged before the nozzle can be returned to its designed hanging position. That is any position where the tip of the nozzle is placed in its designed receptacle and the lock can be inserted. ☐ Yes ☐ No ☐ N/A

29.11. If more than one dispenser is connected to a single pump, an automatic control valve shall prevent fuel from being delivered until the indicating elements have been returned to their correct zero position and engaged. ☐ Yes ☐ No ☐ N/A

29.12. The use of the interlock shall be effective under all conditions when any control on the console, except a system emergency shut-off, is operating and after any momentary power failure. ☐ Yes ☐ No ☐ N/A

Code Reference: S.2.6.1. Electronic Stationary (Other than Stationary Retail Motor-Fuel Dispensers) and Electronic Vehicle-Mounted Meters., ~~Electronic~~

29.13. For individual deliveries, if there is no product flow for three minutes the transaction must be completed before additional product flow is allowed. ☐ Yes ☐ No ☐ N/A

29.14. The three-minute timeout shall be a sealable feature on an indicator. ☐ Yes ☐ No ☐ N/A

Code Reference: S.2.6.2. Automatic Timeout Pay-at-Pump Retail Motor-Fuel Devices

29.15. Once a device has been authorized, it must de-authorize within three minutes if not activated. ☐ Yes ☐ No ☐ N/A

29.16. Re-authorization of the device must be performed before any product can be dispensed. ☐ Yes ☐ No ☐ N/A

29.17. **If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than three minutes.**

☐ Yes ☐ No ☐ N/A

11. Changes to Add Marking Requirements for Water Meters

Background:

At its 2020 Annual Meeting, the NCWM adopted changes to the following paragraphs in the WTR Code in NIST Handbook 44. This item was considered on the S&T Committee's Agenda under Item WTR 20.1 and are shown in the table below for reference.

The purpose of this item is to add marking requirements for meter size and water flow direction indication marking requirements.

S.3.2. Meter Size and Directional Flow Marking Information. A water meter shall be clearly and indelibly marked with the following information:

(a) meter size on the indicator face plate; and

(b) water flow direction.

[Nonretroactive as of January 1, 2022]

(Added 2021)

NTEP Administrators Suggested Change to Publication 14:

The NTEP Administrator could not find an existing section in Pub 14 detailing with water meter marking requirements. Members were asked to determine if a change/addition to Pub 14 is needed to document this new specification, and if so, where does it fit.

2021 MS Meeting Discussion:

During the 2021 MS Meeting, Mr. Keilty opened the item up for discussion. After a review of the item and discussion a few changes to the item were proposed. Please see below for the discussed item changes. Mr. Keilty asked for any other comments. The attending members agreed with the proposed recommendations to change Pub 14 as shown below. Mr. Keilty then asked to consider this item closed once below changes are made.

Page LMD-101 (2022 edition of Pub 14) make the following changes.

46. ~~Multi-jet Meter Indication~~ **Markings**

Code Reference: S.3.1. Location of Marking Information; Utility Type Meters

46.1. All required markings, including those required by G-S.1. Identification shall be either on the meter body or primary indicator. ☐ Yes ☐ No ☐ N/A

Code Reference: S.3.2. Meter Size and Directional Flow Marking Information.

A water meter shall be clearly and indelibly marked with the following information:

46.2. meter size on the indicator face plate; and ☐ Yes ☐ No ☐ N/A

46.3. water flow direction. ☐ Yes ☐ No ☐ N/A

Code Reference: S.2.3. Multi-jet Meter Indication

46.4. Multi-jet water meters shall be clearly and permanently marked ☐ Yes ☐ No ☐ N/A
as such on the device or identified on the Certificate of Approval.

12. Changes to Advancement of Indicating and Recording Elements for Water Meters

Background:

At its 2020 Annual Meeting, the NCWM adopted changes to the following paragraphs in the WTR Code in NIST Handbook 44. This item was considered on the S&T Committee's Agenda under Item WTR 20.2 and are shown in the table below for reference.

The purpose of this item is to clarify that S.1.1.4. Advancement of Indicating and Recording Elements shall also be applicable to non-mechanical water meters.

S.1.1.4. Advancement of Indicating and Recording Elements. – Primary indicating and recording elements shall ~~be susceptible to advancement~~ advance only by the ~~mechanical normal~~ designed operation of the device., intended by the manufacturer.

NTEP Administrators Suggested Change to Publication 14:

Page LMD-99 (2021 edition of Pub 14) make the following changes to the code reference S.1.1.4. Advancement of Indicating and Recording Elements.

Code Reference: S.1.1.4. Advanced of Indicating and Recording Elements

46.1. Primary indicating and recording elements shall ~~be~~ ☐ Yes ☐ No ☐ N/A
~~susceptible to advancement~~ advance only by the ~~mechanical~~
designed operation of the device., intended by the manufacturer.

2021 MS Meeting Discussion:

During the 2021 MS Meeting, Mr. Keilty opened the item up for discussion. After a review of the item and discussion members agreed to the changes to Pub 14 as proposed. Please see below for the discussed item changes. Mr. Keilty then asked to consider this item complete once above changes are made.

Page LMD-99 (2022 edition of Pub 14) make the following changes.

Code Reference: S.1.1.4. Advanced of Indicating and Recording Elements

43.4. Primary indicating and recording elements shall ~~be~~ ☐ Yes ☐ No ☐ N/A
~~susceptible to advancement~~ advance only by the ~~mechanical~~
designed operation of the device., intended by the
manufacturer.

13. Changes to Clarify Specification for Maximum Value of Quantity-Value Divisions for Mass Flow Meters

Background:

At its 2020 Annual Meeting, the NCWM adopted changes to the following paragraphs in the MFM Code in NIST Handbook 44. This item was considered on the S&T Committee's Agenda under Item MFM 20.1 and are shown in the table below for reference.

The purpose of this item was to combine the two paragraphs that address “all gases other than” and “all liquids other than” into one paragraph.

S.1.3.3. Maximum Value of Quantity-Value Divisions.

The maximum value of the quantity-value division shall not exceed the following.

(a) For compressed natural gas dispensed as an engine fuel:

- (1) 0.001 for gasoline gallon equivalent (GGE) units; or
- (2) 0.001 diesel gallon equivalent (DGE) units; or
- (3) 0.001 kg or 0.001 lb for mass units.

(b) For liquefied natural gas dispensed as an engine fuel:

- (1) 0.001 for diesel gallon equivalent (DGE) units; or
- (2) 0.001 kg or 0.001 lb for mass units.
(Added 2019)

(c) For all other gases or liquids ~~other than liquefied natural gas~~ dispensed as an engine fuel a maximum value not greater than 0.2 % of the minimum measured quantity.

(Amended 1994 and 2019)

(Amended 1994, ~~and 2019,~~ and 2021)

NTEP Administrators Suggested Change to Publication 14:

Page LMD-82 (2021 edition of Pub 14) make the following changes to the code reference S.1.3.3. Maximum Value of Quantity-Value Division.

Code Reference: S.1.3.3. Value of Smallest Unit

32.23. The maximum value of the quantity-value division for compressed natural gas dispensed as an engine fuel shall not exceed:

- | | |
|---|---|
| 32.23.1. 0.001 for gasoline gallon equivalent (GGE) units; or | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 32.23.2. 0.001 diesel gallon equivalent (DGE) units; or | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 32.23.3. 0.001 kg or 0.001 lb for mass units. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |

32.24. The maximum value of the quantity-value division for liquefied natural gas dispensed as an engine fuel shall not exceed:

- | | |
|---|---|
| 32.24.1. 0.001 for diesel gallon equivalent (DGE) units; or | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 32.24.2. 0.001 kg or 0.001 lb for mass units | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |

32.25. For all other gases or liquids ~~other than liquefied natural gas~~ dispensed as an engine fuel the maximum value of the quantity-value division shall have maximum value not greater than 0.2 % of the minimum measured quantity.

2021 MS Meeting Discussion:

During the 2021 MS Meeting, Mr. Keilty opened the item up for discussion. After a review of the item and discussion members agreed to the change to Pub 14 as proposed. Mr. Keilty then asked to consider this item complete once below changes are made.

Page LMD-82 (2022 edition of Pub 14) make the following changes.

Code Reference: S.1.3.3. Value of Smallest Unit

32.23. The maximum value of the quantity-value division for compressed natural gas dispensed as an engine fuel shall not exceed:

32.23.1. 0.001 for gasoline gallon equivalent (GGE) units; or ☐ Yes ☐ No ☐ N/A

32.23.2. 0.001 diesel gallon equivalent (DGE) units; or ☐ Yes ☐ No ☐ N/A

32.23.3. 0.001 kg or 0.001 lb for mass units. ☐ Yes ☐ No ☐ N/A

32.24. The maximum value of the quantity-value division for liquefied natural gas dispensed as an engine fuel shall not exceed:

32.24.1. 0.001 for diesel gallon equivalent (DGE) units; or ☐ Yes ☐ No ☐ N/A

32.24.2. 0.001 kg or 0.001 lb for mass units ☐ Yes ☐ No ☐ N/A

32.25. For all other gases or liquids ~~other than liquefied natural gas~~ dispensed as an engine fuel the maximum value of the quantity-value division shall have maximum value not greater than 0.2 % of the minimum measured quantity. ☐ Yes ☐ No ☐ N/A

14. New Proposal for 2022 NCWM Interim Meeting, for Discussion only

The following Form 15 was submitted to the L&R Committee by Mr. Ron Hayes (retired). The proposal is shown below and is being provided for discussion only. Mr. Hayes would appreciate any comments or feedback from the members of the Measuring Sector. This discussion will not be captured in the meeting summary, all comments and feedback should be provided directly to Mr. Hayes.

See Appendix A for proposal.

2021 MS Meeting Discussion:

During the 2021 MS Meeting, Mr. Keilty opened the item up for discussion. MS took no action. Mr. Keilty declared this item as closed.

Closing Items:

15. Changes in Meeting Documentation Development Process

Source:

NTEP Administrator

Background:

The responsibility for the development of the meeting agenda and summary documents has changed. Beginning with the 2021 meeting a member of the Measuring Sector, with the help of NTEP personnel, will assume this responsibility. This change is based on direction from the NTEP Committee and the NCWM Board of Directors and aligns the responsibility with the current action of other Sectors, Work Groups, and Task Groups.

The NTEP Administrator will create a meeting summary report, for the 2020 Measuring Sector Meeting and will distribute to the Sector Members, at a later date.

In addition to the assignment of the individual or individuals responsible for these documents, I would encourage the Sector to develop a timeline document to assist the individual in the ability to develop a meeting agenda in a timely manner and with the least impact to their current responsibilities. Due to meeting time constraints, I would offer my assistance to develop this timeline document offline, with the distribution, review, and acceptance of the document to occur within six months from the adjournment of this meeting. A few items to be addressed in this timeline document would include:

1. A deadline for the submittal of new proposals, and reports from subgroups with specific assigned tasks,
2. A deadline for the distribution of the agenda and summary documents.

I would suggest that the timeline document be placed on the Measuring Sector's home page on the NCWM Web Site.

2020 MS Meeting Discussion

Mr. Flocken reported that during the 2020 NCWM Interim in Riverside, California, NIST and the NCWM Board of Directors agreed to a change in the responsibilities for the development of the meeting agenda and the writing of the meeting summary. This change removes these tasks from the NIST Technical Advisor and moves them to the responsibility of the individual Sectors. To move forward with this change, the Sector Members are tasked with creating a position assigned to an individual who will be responsible for creating these documents. I need to point out that the NIST and NTEP Technical Advisors will support the individual in these tasks. As this may be the first you heard of this change, the NTEP Technical Advisor agreed to write the Meeting Summary for the 2020 meeting.

During the discussion, Mr. Keilty agreed that the sector can become self-sufficient in this area and provided comments on how his experience in performing these tasks within other organizations has helped him gain a better understanding of the issues being discussed. Mrs. Butcher and Mr. Flocken provided comments on how this is a shared task at the National S&T Committee for the writing of their meeting summary.

Mr. Flocken mentioned that he is planning to develop a sector guideline document including possible work instructions and timelines that will be usable by all sectors.

No individual was identified during the discussion and Mr. Keilty and Mr. Flocken agreed to discuss this in more detail at a later date.

2021 MS Meeting Discussion:

During the 2021 MS Meeting, Mr. Keilty opened the item up for discussion. Mr. Flocken asked that this item is to be put on hold pending the outcome of a similar topic with the standing committee reports. This was followed by some discussion on the need to finalize the outcome of an item before moving on to the next item. A second approach was suggested that the in-meeting work could consist of listing a series of bullet points to make the creation of the meeting summary easier.

Mr. Buttler volunteered to take on the responsibility under certain meeting style conditions where the summary is finalized before moving on to the next item.

Mr. Keilty declared this item as closed.

16. Meeting Location and Date of 2021 Measuring Sector Meeting

Background:

This Item is included on the Sector's agenda to allow for input from Sector members on future meetings and to allow NTEP Administration to apprise the Sector of dates that have already been set.

(Note: The members of the Weighing Sector recommended meeting locations of Annapolis, Maryland; Pittsburgh, Pennsylvania; or Minneapolis, Minnesota.)

2020 MS Meeting Discussion:

The sector members agreed that the dates for the 2021 meeting are Tuesday, September 21 and Wednesday, September 22, 2021. No specific location was suggested. Mr. Flocken shared the locations suggested by the Weighing Sector for their 2021 meeting. Mr. Flocken also reminded the members that when considering a meeting location, we need to be aware of the States that our members from California cannot travel too.

Mr. Keilty mentioned the idea of a combined face-to-face and virtual meeting or even a full virtual meeting could be considered for future meetings. While a few positive comments were made, most members felt that a face-to-face meeting was more effective, and a virtual meeting should only be considered under special conditions.

2021 MS Meeting Discussion:

During the 2021 MS Meeting, Mr. Keilty opened the item up for discussion. Mr. Flocken shared the locations suggested by the Weighing Sector for their 2022 meeting. Mr. Flocken also reminded the members that when considering a meeting location, we need to be aware of the states that our members from California cannot travel to. Possible dates for the meeting are September 20-21, 2022. Comments on location: Annapolis, Maryland / Charlotte, North Carolina / Albany, New York / Denver, Colorado / San Antonio, Texas / Albuquerque, New Mexico / Santa Fe, New Mexico / Santa Ana Pueblo Resort, New Mexico

17. Meeting Attendees

The following individuals participated in the 2020 Measuring Sector meeting.

Measuring Sector Members:

Mr. Luciano Burtini	Measurement Canada
Mrs. Tina Butcher	NIST, OWM
Mr. Marc Buttler	Emerson / Micro Motion
Mr. Craig Cavanaugh	Tuthill Transfer Systems
Mr. Darrell Flocken	NCWM/NTEP
Mr. John Hathaway	Murray Equipment
Mr. Dimitri Karimov	Liquid Controls, LLC
Mr. Allen Katalinic	NCWM/NTEP
Mr. Michael Keilty	Endress + Hauser Flowtec AG, USA
Mr. Louis Martinet	Measurement Canada
Mr. Richard Miller	FMC Tech. Measurement Solutions, Inc.
Mr. Randy Moses	Wayne Fueling Systems
Mr. Andre Noel	Neptune Tech. Group, Inc.
Mr. Chad Parker	North Carolina
Mr. Brent Price	Gilbarco, Inc.
Mr. Randy Ramsey	North Carolina
Mr. John Roach	California

Other Participants:

Mr. Treyton Drake	Liquid Controls, LLC
Mr. Mike Manheim	NCWM/NTEP
Mr. Steve Palluth	Zenner Performance Meters, Inc.

The following individuals participated in the 2021 Measuring Sector meeting.

Measuring Sector Members:

Mr. Michael Keilty	Endress + Hauser Flowtec AG USA
Mr. Marc Buttler	Emerson / Micro Motion
Mr. Ron Gallon	Zenner Performance Meters
Mr. Randy Moses	Wayne Fueling Systems
Mr. John Hathaway	Murray Equipment
Mr. Dimitri Karimov	Liquid Controls, LLC
Mr. Richard Miller	FMC Tech. Measurement Solutions, Inc.
Mr. Brent Price	Gilbarco, Inc.
Mr. Randy Ramsey	North Carolina
Mr. Chad Parker	North Carolina
Mrs. Tina Butcher	NIST, OWM
Mr. Darrell Flocken	NCWM/NTEP
Mr. Mike Manheim	NCWM/NTEP
Mr. Allen Katalinic	NCWM/NTEP
Mr. Louis Martinet	Measurement Canada
Mr. John Roach	California

Appendix E

National Type Evaluation Program (NTEP) Software Sector Meeting Summary

August 12th, 2020

Virtual

(In conjunction with the Grain Analyzer Sector)

May 6th, 2021

Virtual

(In conjunction with the Multiple Dimensioning Measuring Device Work Group)

INTRODUCTION

The charge of the National Type Evaluation Program (NTEP) Software Sector is important in providing appropriate type evaluation criteria for software-based weighing or measuring device based on specifications, tolerances and technical requirements of NIST Handbook 44 Section 1.10 General Code, Section 2 for weighing devices, Section 3 for liquid and vapor measuring devices, and Section 5 for taximeters, grain analyzers, and multiple dimension measuring devices. The sector's recommendations are presented to the NTEP Committee each January for approval and inclusion in NCWM Publication 14 Technical Policy, Checklists, and Test Procedures for national type evaluation.

The sector is also called upon occasionally for technical expertise in addressing difficult NIST Handbook 44 issues on the agenda of the National Conference on Weights and Measures (NCWM) Specifications and Tolerances (S&T) Committee. Sector membership includes industry, NTEP laboratory representatives, technical advisors and the NTEP Administrator. Meetings are held annually, or as needed and are open to all NCWM members and other registered parties.

Suggested revisions are shown in **bold face print** by ~~striking out~~ information to be deleted and underlining information to be added. Requirements that are proposed to be non-retroactive are printed in ***bold faced italics***.

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Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
BIML	International Bureau of Legal Metrology	OIML	International Organization of Legal Metrology
CC	Certificate of Conformance	OWM	Office of Weights and Measures
EPO	Examination Procedure Outline	PDC	Professional Development Committee
NCWM	National Conference on Weights and Measures	S&T	Specifications and Tolerances Committee
NIST	National Institute of Standards and Technology	SMA	Scale Manufacturers Association
NTEP	National Type Evaluation Program	WELMEC	European Cooperation in Legal Metrology

Details of All Items
(In order by Reference Key)

WELCOME

At the 2020 NTEP Software Sector Meeting, since it was a joint meeting with the Grain Analyzer Sector, some time was set aside to meet and greet both new and familiar faces.

At the 2021 NTEP Software Sector Meeting, since it was a joint meeting with the MDMD Work Group, some time was allocated to meet and greet both new and familiar faces.

STATUS REPORTS – RELATED NCWM AND INTERNATIONAL ACTIVITY

Attendees of the 2020 and 2021 NCWM Interim and Annual Meetings were asked to share any relevant comments or discussion that took place during the open hearings or NCWM Standards and Tolerances (S&T) Committee working sessions. Results related to items on our Agenda were of particular focus.

At the 2020 NTEP Committee Meeting, Mr. Darrell Flocken (NTEP) reported to the NTEP Committee that our Sector is working on its Pub 14. Mr. Jim Pettinato (TechnipFMC) thinks our document may be ready to publish, though we'll discuss it in detail during that part of the agenda.

There were a couple topics from the Weighing Sector discussed that may be of interest to the Software Sector:

- POS System specification requiring tare to be added
- Class I and Class II scales Division D vs. E

They seem to be very device-specific, so it's doubtful the Software Sector will get too involved.

Dr. Katya Delak (NIST OWM), provided a synopsis of international activity that relates to the work of the sector. (See appendix B)

The D31 2019 revision was reviewed and approved in October. It then went into immediate revision. Work with the subgroups have begun, including machine learning, remote verification, and terminology. PTB is spearheading work involving a European technology cloud, working with Sartorius. There haven't been any meetings called yet for the entire D31 group.

It appears that D31 has taken on a larger role within OIML. D31's requirements seem to be applied broadly.

At the 2021 Interim NTEP Committee Meeting, the Committee reiterated that they're looking forward to seeing our first draft of Pub. 14.

Dr. Katya Delak (NIST OWM) provided a synopsis of international activity that relates to the work of the sector. (See appendix B)

JOINT SESSION PROGRESS REPORT, ACTIVE ITEMS OF MUTUAL INTEREST

This is the second joint meeting of these Sectors. To make sure we make the most of the time a quick review of the agenda items from both Sectors will be held to identify those that require collaboration, so all participants have a solid foundation for discussion. As part of this review, items of importance or interest should be allocated more time during the joint session day.

CARRY-OVER ITEMS

1. Software Identification / Markings

Source:

NTEP Software Sector

Background:

See the 2017 Software Sector Meeting Summary for more background on this item.

Since its inception, the sector has wrestled with the issue of software identification and marking requirements. Numerous changes to the HB44 language were attempted and though support for the concepts was expressed, resistance to specific language made the course difficult. Finally, in 2015 in a joint meeting with the Measuring Sector, some additional fine tuning on the recommended changes to G-S.1 was done and we felt we had addressed everyone's concerns and had language ready to be voted upon for adoption. The recommended language is below.

Amend NIST Handbook 44: G-S.1. Identification as follows:

G-S.1. Identification. – All equipment, except weights and separate parts necessary to the measurement process but not having any metrological effect, shall be clearly and permanently marked for the purposes of identification with the following information:

- (a) the name, initials, or trademark of the manufacturer or distributor;
- (b) a model identifier that positively identifies the pattern or design of the device;

(1) The model identifier shall be prefaced by the word "Model," "Type," or "Pattern." These terms may be followed by the word "Number" or an abbreviation of that word. The abbreviation for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., No or No.). The abbreviation for the word "Model" shall be "Mod" or "Mod." Prefix lettering may be initial capitals, all capitals, or all lowercase.

[Nonretroactive as of January 1, 2003]

(Added 2000) (Amended 2001)

- (c) *a nonrepetitive serial number, except for equipment with no moving or electronic component parts and ~~not-built-for-purpose software-based software devices~~ software;*
[Nonretroactive as of January 1, 1968]

(Amended 2003)

- (1) *The serial number shall be prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required serial number.*
[Nonretroactive as of January 1, 1986]

- (2) *Abbreviations for the word “Serial” shall, as a minimum, begin with the letter “S,” and abbreviations for the word “Number” shall, as a minimum, begin with the letter “N” (e.g., S/N, SN, Ser. No., and S. No.).*
[Nonretroactive as of January 1, 2001]

- (d) *the current software version or revision identifier for not-built-for-purpose software-based devices; manufactured as of January 1, 2004 and all software-based devices or equipment manufactured as of January 1, 2022;*

~~*[Nonretroactive as of January 1, 2004]*~~

(Added 2003) **(Amended 2017)**

- (1) *The version or revision identifier shall be:*

- i. *prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required version or revision;*

[Nonretroactive as of January 1, 2007]

(Added 2006)

Note: If the equipment is capable of displaying the version or revision identifier but is unable to meet the formatting requirement, through the NTEP type evaluation process, other options may be deemed acceptable and described in the CC.

(Added 2017)

- ii. ***continuously displayed or be accessible via the display. Instructions for displaying the version or revision identifier shall be described in the CC. As an alternative, permanently marking the version or revision identifier shall be acceptable providing the device does not always have an integral interface to communicate the version or revision identifier.***

[Nonretroactive as of January 1, 2022]

(Added 2017)

- (2) *Abbreviations for the word “Version” shall, as a minimum, begin with the letter “V” and may be followed by the word “Number.” Abbreviations for the word “Revision” shall, as a minimum, begin with the letter “R” and may be followed by the word “Number.” The abbreviation for the word “Number” shall, as a minimum, begin with the letter “N” (e.g., No or No.). **Prefix lettering may be initial capitals, all capitals, or all lowercase.***

[Nonretroactive as of January 1, 2007]

(Added 2006) (Amended 2017)

- (e) *an National Type Evaluation Program (NTEP) Certificate of Conformance (CC) number or a corresponding CC Addendum Number for devices that have a CC.*

- (1) *The CC Number or a corresponding CC Addendum Number shall be prefaced by the terms “NTEP*

CC,” “CC,” or “Approval.” These terms may be followed by the word “Number” or an abbreviation of that word. The abbreviation for the word “Number” shall, as a minimum, begin with the letter “N” (e.g., No or No.)
[Nonretroactive as of January 1, 2003]

The required information shall be so located that it is readily observable without the necessity of the disassembly of a part requiring the use of any means separate from the device.

(Amended 1985, 1991, 1999, 2000, 2001, 2003, ~~and~~, 2006 ~~and~~ 2017)

The amended proposal was Accepted as a Voting item at the 2016 NCMW Interim meeting and passed at the 2016 NCWM Annual Meeting.

Mr. John Roach (California DMS) asked whether CC’s will still allow “and higher” terminology in reference to the version numbers. International standards often do not allow that, though bug fixes can be an exception. The risk class affects how much they scrutinize changes. Mr. Darrell Flocken said that we should be creative when handling software changes, so that we aren’t requiring unnecessary reevaluations. Until an alternative means of managing firmware updates (both significant and non-significant metrologically) is codified, it is likely unavoidable to continue allowing ‘and higher’.

2020 Discussion:

The group estimated the scope of work remaining and decided it is still not necessary to start working on future proposed language modification for G-S.1 yet. Hence, this agenda item remains tabled until 2020. Previous discussions had indicated that the ultimate goal is the elimination of the differentiation between requirements for metrologically significant software in not-built-for-purpose vs. built-for-purpose (i.e. elimination of G-S.1.1).

Mr. Jan Konijnenburg asked how an inspector can get to the certificate number if it is not hard-marked or continuously displayed. If there are a limited number of options leading to displaying it, that helps, though it could be challenging to reach a consensus on the allowed options.

It was noted that most inspectors don’t like to access multiple screens. They would much prefer to just have the CC number continuously displayed.

Software that runs on tablets tends to have extremely limited real estate on their screens. It is very difficult to continuously display a CC number on that sort of app. A limited set of text or icons should be something most inspectors can adapt to. There’s a concern that the inspector might accidentally change a setting; this also applies to inspectors looking for the audit trail or software version number.

If we can alter G-S.1.e. sufficiently, we may be able to eliminate G-S.1.1.

Mrs. Tina Butcher pointed out that the requirements regarding audit trails ensure that the audit trail is isolated to only include metrologically significant information. This may be applicable to viewing the version and CC. The access to view the information must be separate from the ability to change the metrologically significant parameters. There’s a lot more information in NCWM Publication 14 than in NIST HB 44, though field inspectors aren’t likely to rely heavily on NCWM Pub. 14.

The Software Sector’s Pub. 14 document should include guidance on audit trails – accessing, viewing, etc. NIST has a training video on this subject. NCWM Pub. 14 for the Measuring Sector Appendix A and B and Weighing Sector’s Appendix currently include guidance on audit trails.

It was suggested we include an indication of preference for how to mark the CC. That is, indicate that the preference is for continuous display, failing that, making it easy to access from a limited number of options. Hard marking is least preferred. In other words, document best practices.

Mr. Flocken recommended that we begin working on this item prior to 2022 given that it may take some time for others to accept any changes we propose.

2020 Conclusion:

We will create subgroup to work on a proposal including Mr. Jim Pettinato, Mr. Vere Miller, Ms. Teri Gulke, Mr. Flocken, and Mrs Tina Butcher (as a consultant/reviewer). Mr. Pettinato will send out an invitation and set up a meeting.

2021 Discussion:

G-S.1.1. Location of Marking Information continues to use the terminology “Not-Built-For-Purpose”. We would prefer to reduce the usage of that term and “Built-For-Purpose” (or eliminate them altogether). Those categories continue to blur as time goes by. It was acknowledged that it is always more difficult to alter the general code.

Mr. Flocken reported that NTEP is challenged when they get software running on e.g. a phone or tablet. Developers have sometimes failed to properly display the version number, which makes it difficult for inspectors to view the information. Pub. 14 should indicate that continuously displaying the version number is the most preferred method. NIST HB44 has the requirement, and Pub. 14 is for explaining how to comply.

The group agreed with the interpretation that ‘Continuously displayed’ is intended to mean while in operating mode. The CC has to be permanently marked or continuously displayed. This allows the information for accessing the version number to be within the CC.

Mr. Zach Tripoulas asked whether the group thought that the Scale Marking Requirements are congruent with G-S.1. It was pointed out that some of the exceptions noted in G-S.1. are intended to cover applications that can’t comply with the general requirements. One example is 7-segment displays. Refer to G-S.1.d.1.i. and G-S.1.d.1.ii.

Mr. Flocken recommends that we plan a review of the contents of NIST HB44 to verify that it correctly reflects our understanding of the intent. From there, we can clarify matters within Pub. 14, potentially within a checklist. Then we can come back to determine whether any changes are needed to NIST HB44.

2021 Conclusion:

Mr. Pettinato expressed concern that eliminating differences between Not-Built-For-Purpose and Built-For-Purpose will require rewriting rather than minor tweaks to NIST HB44. The Sector agreed to focus on Pub. 14 for now.

2. Identification of Certified Software

Source:

NTEP Software Sector

Background:

See the 2017 Software Sector Meeting Summary for more background on this item.

This item originated as an attempt to answer the question “How does the field inspector know that the software running in the device is the same software evaluated and approved by the lab?”

In 2010, the sector recommended the following change to *NIST Handbook 44*, General Code: G-S.1(d) to add a new subsection (3):

- (d) *the current software version or revision identifier*) the current software version or revision identifier for not-built-for-purpose software-based devices manufactured as of January 1, 2004 and all software-based devices or equipment manufactured as of January 1, 2022;

(Added 2003) (Amended 2016)

- (1) *The version or revision identifier shall be:*

- i. *prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required version or revision;*

[Nonretroactive as of January 1, 2007]

(Added 2006)

Note: *If the equipment is capable of displaying the version or revision identifier but is unable to meet the formatting requirement, through the NTEP type evaluation process, other options may be deemed acceptable and described in the CC.*

(Added 2016)

- ii. *continuously displayed or be accessible via the display. Instructions for displaying the version or revision identifier shall be described in the CC. As an alternative, permanently marking the version or revision identifier shall be acceptable providing the device does not always have an integral interface to communicate the version or revision identifier.*

[Nonretroactive as of January 1, 2022]

(Added 2017)

- (2) *Abbreviations for the word “Version” shall, as a minimum, begin with the letter “V” and may be followed by the word “Number.” Abbreviations for the word “Revision” shall, as a minimum, begin with the letter “R” and may be followed by the word “Number.” The abbreviation for the word “Number” shall, as a minimum, begin with the letter “N” (e.g., No or No.). Prefix lettering may be initial capitals, all capitals, or all lowercase.*

[Nonretroactive as of January 1, 2007]

(Added 2006) (Amended 2017)

- (3) **The version or revision identifier shall be directly and inseparably linked to the software itself. The version or revision identifier may consist of more than one part, but at least one part shall be dedicated to the metrologically significant software.**

[Nonretroactive as of January 1, 202X]

(Added 20XX)

Also, the sector recommended the following information be added to NCWM Publication 14 as explanation/examples:

- Unique identifier must be displayable/printable on command or during operation, etc.
- At a minimum, a version/revision indication (1.02.09, rev 3.0 a, etc.). Could also consist of/contain checksum, etc. (crc32, for example)

This original item was eventually withdrawn, and the proposal was split into two separate items. The critical need to include version/revision in the marking requirements for all software-based devices was pushed forward and passed independently.

In addition, the sector considered the following information to be added to NCWM Publication 14 as explanation/examples:

- The current software identifier must be displayable/printable on command during operation (or made evident by other means deemed acceptable by G-S.1.)
- At a minimum, the software identifier must include a version/revision indication (1.02.09, rev 3.0 a, etc.). It could also consist of / contain checksum, etc. (crc32, for example).
- The version or revision identifier may consist of more than one part, but at least one part shall be dedicated to the metrologically significant software.

Other questions previously brought up that have not really been satisfied to date are:

- If we allow hard-marking of the software identifier (the sector has wavered on this in the past), does the above wording then imply that some mechanical means is required (i.e. physical seal) to “inseparably link” the identifier to the software?
- If a device is capable of doing so, does it still have to be able to display, print or communicate the identifier somehow, even if it is hard-marked?

Regarding field inspection and locating the required information: The list of acceptable menu text and symbols in Appendix A are intended to assist the labs in finding the certification number. The sector noticed no action by the sectors had been taken when this list was circulated for comment. We would like to remind them that we would like to have it reviewed. We feel that this belongs in, for example, the Weighing Device Pub. 14, page DES-22, Section 3; the Belt – Conveyor Scales, page BCS-10, Section 8.7; the Measuring Devices, page LMD-21, Section 1.6; the Grain Moisture Meter, page GMM-14, Section 1 (G.S.1); and Near Infrared Grain Analyzers, page NIR-8, Section 1 (G.S.1).

Mrs. Butcher mentioned that the Weighing Sector has a Weighing Checklist that has a similar set of approved symbols, so the examples shown in Appendix A would be in line with their current practice.

Since the recommended new G-S.1 language was voted on and adopted in 2016, we can now move forward on this item and consider adding to NCWM Publication 14 the specifics that we have been discussing related to presenting the software identification.

Mr. Flocken asked whether it’s a specification or information. That would determine whether it should belong in NIST HB 44 or only in NCWM Pub. 14. One possibility is below:

(3) The version or revision identifier shall be directly and inseparably linked to the software itself.

Note: The version or revision identifier may consist of more than one part, but at least one part shall be dedicated to the metrologically significant software.

[Nonretroactive as of January 1, 202X]

(Added 20XX)

Concern was expressed that this could cause confusion with field inspectors. Software separation isn’t something that’s intended to be useful in the field, it is intended to ease type approval and software maintenance release processing. This would lend weight to the argument of keeping it in NCWM Pub. 14.

If the Sector desires to include this in NCWM Pub. 14, we would need to identify all the sections where this concept would need to be added. The Software Sector doesn’t have the authority to add it to the other sectors’ NCWM Pub. 14’s. Mr. Flocken reported that a note regarding the concept of software separation has already been added to several of the various NCWM Pub. 14 sections.

The Chair proposed that we table Agenda Item 2 until 2021, and that we continue to pursue implementing the checklist in NCWM Pub. 14. Mr. Flocken suggested that the Software Sector recommend that the various sectors adopt this for their Pub. 14’s. It would take a year or so, to make it through all the various sectors. A note could be

added saying that a device can't be rejected if it doesn't meet this requirement in the checklist until 2022. It was agreed that we would table this item until the 2021 meeting, at which time we will propose the following (updated) wording for the 2022 NCWM Pub. 14:

3. Additional Marking Requirements- Software

Identification of Certified Software:

The manufacturer must describe and possibly demonstrate how the version or revision identifier is directly and inseparably linked to the metrologically significant software. Where the version revision identifier is comprised of more than one part, the manufacturer shall describe which portion represents the metrological significant software and which does not.

Note: Manufacturers may choose to separate metrologically significant software from non-metrologically significant software. Separation would allow the revision of the non-metrological portion without the need for further evaluation. In addition, non-metrologically significant software may be updated on devices without breaking a seal, if so designed. Separation of software requires that all software modules (programs, subroutines, objects, etc.) that perform metrologically significant functions or that contain metrologically significant data domains form the metrologically significant software part of a measuring instrument (device or sub-assembly). If the separation of the software is not possible or needed, then the software is metrologically significant as a whole.

At the 2017 joint meeting, the MDMD Work Group discussed adding the section regarding linking of identifier to the software to their section in NCWM Pub. 14. There were no objections, so Mr. Flocken said he'd add it for next year's publication. A note shall be added that this is voluntary until 2022.

Also, we further discussed the idea of software separation, especially in how it pertains to the difference between the terms "metrologically significant" and "legally relevant". Some legal requirements have nothing to do with metrology. There is a difference in how the U.S. regards this (since each state can have different legal requirements) vs. the philosophy in Europe. There isn't a definition of "metrologically significant" in NIST Handbook 44, but NCWM Publication 14 has a description of all the parameters that needs to be sealed, which includes both metrologically significant and legally relevant parameters.

A definition of "metrologically significant" could be helpful, but Mr. Flocken suggested that we make sure it doesn't contradict VCAP's administrative policies.

NIST Handbook. 44 does contain a definition for "metrological integrity".

Type evaluation is the time at which decisions are made regarding which exact parameters are sealable. According to Mr. Jim Truex, the U.S. has never been able to come to a consensus on this subject.

Mr. Pettinato suggested that we work offline to generate a description intended to provide guidance on what we mean by "metrologically significant". Mr. Pettinato, Mr. Doug Bliss, Dr. Ambler Thompson, and Mr. Kevin Detert volunteered to make up a subcommittee to address this subject.

We also considered the issue of having to adopt a general software requirement to multiple sections of NCWM Publication 14 to address essentially the same requirement for each category of device separately. The idea was floated by the Sector that perhaps a new section should be added to NCWM Publication 14 specific to software that applies to all metrologically significant software in all devices types that might contain such. Rather than formally suggesting this be done, we decided to informally run the idea past the Specifications and Tolerances Committee. That way, if there was little interest or strong objection, we would not waste time generating a draft.

How the Sector decides to progress on this item is dependent on the Board's decision regarding a separate section on software for Publication 14. If the decision is to grant the Sector's wishes, then we would start crafting language for our new Section. Otherwise, we can consider the suggested language put forth in the last meeting.

If the Software Sector gets its own section in NCWM Publication 14, we may not need to alter NIST HB 44 regarding this specific agenda item, according to Mr. Flocken. There is a general NTEP technical policy within NCWM Pub. 14, which may be the best place to address communicating the requirements for evaluation of software and software-based devices and the need to include type compliant software version/revision information on the certificate of conformance.

This agenda item also was tabled until a decision on the direction for NCWM Publication 14 was made by the NTEP Committee. Since we have been given the go-ahead to develop a section for NCWM Publication 14 specific to software, the Sector should finish developing this item.

Mr. Flocken asked Mrs. Butcher's opinion as to whether the requirement described above really belongs under markings. Mrs. Butcher pointed out that G-S.1.1 does refer to identifiers, and the above text does pertain to identification of the software.

We discussed how bug fixes will be handled when software version identifiers become inseparable from the software itself, such as when a checksum is used. Typically, the software change would need to be reported, and NCWM would decide whether the software would need to be reevaluated or a description simply added to the certificate.

A lot of this will be dependent on how the software identifier is defined. For example, for V1.xx.yy, yy could be used solely for bug fixes.

Mr. Roach reports that his lab only allows the methods described in G-S.1.1.b or on the list in Appendix A. Ms. Teri Gulke reports that LC's Marketing person dislikes the example icons and finds them limiting.

Mr. Pettinato asked what the opinion of the labs and field inspectors is regarding whether the requirement to make the software identifier inseparably linked to the software must be included in NIST HB44. Mr. Flocken didn't think it was intuitive to look under 'G-S.1.1. Markings' for this requirement. It probably should be in the general code of NIST HB44, but perhaps somewhere other than Markings. Mrs. Butcher said that G-S.1.1. is a bit of a mess, and would benefit from being reorganized. Assuming we do eventually get rid of the differentiation between built-for-purpose and not-built-for-purpose, that will certainly help in streamlining (or eliminating) G-S.1.1.

The Sector will prioritize work on the Pub. 14 software section. In 2021, we will consider revisions to G-S.1.1 as well as the changes pending as described in Agenda Item 1, since the non-retroactive dates will be expiring.

Also in 2021, the example menu text/icons in Appendix A need to be revisited to update/extend the list and clarify the application (just examples, or complete set of allowed solutions?).

Now that the Software Sector has its own Pub. 14, the question was raised as to whether the proposed text need to be part of NIST Handbook 44. Mr. Flocken recommended that the Sector continue to move forward this item with the goal of inclusion of the proposed text into NIST HB 44. There was general consensus on this approach.

The Sector will prioritize work on the Pub. 14 software section. We will consider revisions to G-S.1.1 as well as the changes pending as described in Agenda Item 1, since the non-retroactive dates will be expiring.

2020 Discussion:

For 2020, the example menu text/icons in Appendix A need to be revisited to update/extend the list and clarify the application (just examples, or complete set of allowed solutions?)

Now that the Software Sector has its own NCWM Pub. 14, the question was raised as to whether the proposed text need to be part of NIST Handbook 44. Mr. Flocken recommended that the Sector continue to move forward this item with the goal of inclusion of the proposed text into NIST HB44. There was general consensus on this approach.

2021 Discussion:

Mr. Pettinato and Mr. Flocken both expressed the opinion that these recommendations and information regarding software separation do not constitute a marking requirement. G-S.1. already includes a marking requirement for a version / revision.

This wording has already been incorporated into Pub. 14's for the various sectors, prior to the creation of a Software Pub. 14. Eventually Mr. Flocken will have to go back and convince the other sectors to remove the redundant wordage from their Pub. 14s.

2020 Conclusion:

The Sector will prioritize work on the Pub. 14 software section. In 2020 we will consider revisions to G-S.1.1 as well as the changes pending as described in Agenda Item 1, since the non-retroactive dates will be expiring.

2021 Conclusion:

Once the Sector has satisfactorily included language within Pub. 14 to address this point, we will consider this agenda item finalized.

3. Software Protection / Security

Source:

NTEP Software Sector

Background:

See the 2017 Software Sector Summary for additional background on this item.

The Sector continued to develop a proposed checklist for NCWM Publication 14. The numbering will still need to be added. This is based roughly on R 76 – 2 checklist and discussions beginning as early as the October 2007 NTEP Software Sector Meeting. The information requested by this checklist is currently voluntary, however, it is recommended that applicants comply with these requests or provide specific information as to why they may not be able to comply. Based on this information, the checklist may be amended to better fit with NTEP's need for information and the applicant's ability to comply.

California, Maryland and Ohio laboratories agreed to use this checklist on one of the next devices they have in the lab and report back to the sector on what the problems may be. In February 2011, the North Carolina laboratory was also given a copy of the checklist to try.

The labs using this checklist on a trial basis indicated that there was some confusion as to versions/wording. There may be more than one version in circulation. The version shown in this Summary shall be used henceforth.

The checklist as updated during the 2014 meeting:

1. Devices with Software

- 1.1. Declaration of the manufacturer that the software is used in a fixed hardware and software environment. ☐ Yes ☐ No ☐ N/A
The manufacturer should indicate whether it's solely software or includes hardware in the system. Can the software be changed after the system has been shipped without breaking a seal? AND
- 1.2. Cannot be modified or uploaded by any means after securing/verification. ☐ Yes ☐ No ☐ N/A
With the seal intact, can you change the software?

Note: It is acceptable to break the "seal" and load new software, audit trail is also a sufficient seal.

- 1.3. The software documentation contains:

- 1.3.1. Description of all functions, designating those that are considered metrologically significant. ☐ Yes ☐ No ☐ N/A
- 1.3.2. Description of the securing means (evidence of an intervention). ☐ Yes ☐ No ☐ N/A
- 1.3.3. Software Identification, including version/revision. **It may also include things like name, part number, CRC, etc.** ☐ Yes ☐ No ☐ N/A
- 1.3.4. Description how to check the actual software identification. ☐ Yes ☐ No ☐ N/A
- 1.4. The software identification is:
- 1.4.1. Clearly assigned to the metrologically significant software and functions. ☐ Yes ☐ No ☐ N/A
- 1.4.2. Provided by the device as documented. ☐ Yes ☐ No ☐ N/A
- 1.4.3. Directly linked to the software itself. **This means that you can't easily change the software without changing the software identifier. For example, the version identifier can't be in a text file that's easily editable, or in a variable that the user can edit.** ☐ Yes ☐ No ☐ N/A
- 2. Programmable or Loadable Metrologically Significant Software**
- 2.1. The metrologically significant software is:
- 2.1.1. Documented with all relevant (see below for list of documents) information. *The list of docs referred to exists in agenda item 5.* ☐ Yes ☐ No ☐ N/A
- 2.1.2. Protected against accidental or intentional changes. ☐ Yes ☐ No ☐ N/A
- 2.2. Evidence of intervention (such as, changes, uploads, circumvention) is available until the next verification / inspection (e.g., physical seal, Checksum, Cyclical Redundancy Check (CRC), audit trail, etc. means of security). ☐ Yes ☐ No ☐ N/A
- 3. Software with no access to the operating system and/or programs possible for the user. This section and section 4 are intended to be mutually exclusive. Complete this section only if you replied Yes to 1.1.**
- 3.3. Check whether there is a complete set of commands (e.g., function keys or commands via external interfaces) supplied and accompanied by short descriptions. ☐ Yes ☐ No ☐ N/A
- 3.4. Check whether the manufacturer has submitted a written declaration of the completeness of the set of commands. ☐ Yes ☐ No ☐ N/A
- 4. Operating System and / or Program(s) Accessible for the User. Complete this section only if you replied No to 1.1.**
- 4.5. Check whether a checksum or equivalent signature is generated over the machine code of the metrologically significant software (program module(s) subject to legal control Weights and Measures jurisdiction and type-specific parameters). **This is a declaration or explanation by the manufacturer.** ☐ Yes ☐ No ☐ N/A
- 4.6. Check whether the metrologically significant software will detect and act upon any unauthorized alteration of the metrologically significant software using simple software tools (e.g., text editor). **This is a declaration or explanation by the manufacturer.** ☐ Yes ☐ No ☐ N/A
- 4.7. Check whether the manufacturer has provided a description of the software functions that are metrologically significant, meaning of the data,

- etc., e.g. an architecture diagram or flowchart.
- 4.8. Check that there is guidance related to the software identification (version, revision, etc.), how to view it, and how it is tied to the software.
 - 4.9. Check that the manufacturer has provided an overview of the security aspects of the operating system, e.g. protection, user accounts, privileges, etc.

5. Software Interface(s)

- 5.10. Verify the manufacturer has documented:
 - 5.10.1. If software separation is employed, the program modules of the metrologically significant software are defined and separated. ☐ Yes ☐ No ☐ N/A
 - 5.10.2. For software that can access the operating system or if the program is accessible to the user, the protective software interface itself is part of the metrologically significant software. ☐ Yes ☐ No ☐ N/A
 - 5.10.3. The functions of the metrologically significant software that can be accessed ~~via the protective software interface.~~ ☐ Yes ☐ No ☐ N/A
 - 5.10.4. The metrologically significant parameters that may be exchanged ~~via the protective software interface~~ are defined. ☐ Yes ☐ No ☐ N/A
 - 5.10.5. The description of the functions and parameters are conclusive and complete. ☐ Yes ☐ No ☐ N/A
 - 5.10.6. There are software interface instructions for the third party (external) application programmer. ☐ Yes ☐ No ☐ N/A

This checklist was discussed during the 2017 NTEP lab meeting, and Mr. Flocken received two submissions. One response was very helpful, and the other one said that everything was N/A pertaining to their device, except for a bit regarding calculating the CRC and sealing. In general, the labs said that even when they hand the checklist out, they usually don't get it back. We're pushing the labs to be a bit more proactive.

MDMD has only one lab. All the labs have been given a copy of the checklist, but we are not sure whether their lab has found it helpful.

Again, the benefit of a separate section of NCWM Pub. 14 for software is evident for this agenda item.

Mr. Flocken shared (anonymously) some results from the NTEP labs. There were three checklists returned over the last year. One submission included commentary from the company responding to the checklist regarding the difference between embedded systems versus open systems. That submitter used the WELMEC guidelines.

Mr. Flocken reported that, in general, it seems that companies are starting to respond more thoughtfully to the checklist. In prior years, it seemed like they'd simply just checked everything off.

There appears to be a gap between the companies responding to the checklist and the NTEP labs perceiving use in the responses. There's a need for an explanation of what responses to the various questions mean to the NTEP lab inspectors, which should be in plain language, similar to the 2014 presentation on the general concepts of the Software Sector's work.

We also discussed the need to formalize how the checklist is distributed. Cardinal Scale reported that they had not received it as part of a type approval application packet, and it seems they are not unique.

It was mentioned that Mexico now considers many things "software", including PAL's, GAL's, etc. At one time we tried to craft our own definition of software without much luck. We may be able to reference an international definition.

The VCAP program should reference the software identifier and version/revision, but until NTEP is consistent on how the software identifier and version/revision is recorded on the CC, this is not feasible. VCAP was originally intended as an assessment whether an implementation meets type.

Mr. Flocken offered to start formalizing the procedure for distributing the checklist to submitters. The Sector will work on crafting an explanation for the NTEP labs as to how the answers to the checklist benefit their inspectors.

At the 2019 meeting, Mr. Flocken provided 5 returned checklists, as well as some feedback on the checklist. Somewhat surprisingly, of those submitting completed checklists, 4 of the 5 reported that they're performing software separation. The feedback was largely from scale manufacturers, so there was not much feedback related to software/firmware updating or revision tracking. There appears to be a lot more software-only (e.g., app) device type applications for certification. They typically perform software separation and are downloadable.

Some specific feedback was given by one submitter on the checklist itself. Points of comment included the following:

- Checklist items 1.1. and 1.2 independently might make sense, but together seem contradictory.
- The term "user" might be inaccurate in some applications, suggest using "consumer"
- Likewise, "manufacturer" might a better term to use than "submitter"

Additional feedback from the labs was that it still seems that software developers often did not understand the questions on the checklist. This was particularly true for app developers who don't have any experience with W&M.

There was a bit of confusion regarding the version of the checklist that people have copies of. Mr. Pettinato suggested adding a version number to the checklist.

Mr. Roach said he had trouble issuing the checklist to companies because it is not a requirement. The second problem was that the people the checklist was given to often didn't understand it because they were not software people. A reminder was shared that the NCWM Pub. 14 Administrative Policy grants the laboratories a significant amount of freedom in what they can request, and if a submitter wants a certificate they must comply with these requests.

Mr. Pettinato will attempt to revise the checklist given the recent feedback. He will review older versions of the checklist to attempt to determine the original intent of 1.1. and 1.2. (We went back to the version of the checklist from 2012, and it does seem like the intent was changed when we tried to clarify the meaning. Originally, it seems like it was trying to verify that the software was for a Type P system, not Type U.)

2020 Discussion:

The revised checklist was included in the draft NCWM Pub 14 section and sent to the Sector for review.

Mr. Flocken reported that he's only received one checklist this year. It was a software-based company, and they seemed to understand the points on the checklist. He suggested that we change the checklist from something that we've been using to gauge understanding in industry to something that is primarily intended to provide guidance to companies that have limited W&M knowledge.

Mr. Pettinato suggested we explore adapting text from international documents to provide such guidance. We need to evaluate the effort required, and how much value would be provided. Mr. Flocken suggested that a white paper could be disseminated via the NTEP newsletter. It could also be linked to from the NTEP website.

Mr. Roach reported that he has a company that is intending to upgrade software, and they say that their metrologically significant software is separated from the non-metrological software. He's looking for a bit of guidance on how to handle the situation. Mr. Konijnenburg pointed out that it is difficult to verify they are doing

things correctly just looking at the software itself. Documentation plays a large role in showing inspectors / evaluators that the design has addressed the software separation properly.

2021 Discussion:

It seems like the feedback from Sector members indicates that it would be beneficial to the checklist to add some explanatory text. Discussion on how to best implement this explanatory text included suggestions to incorporate information from international standards as one possibility.

Mr. Flocken received only one checklist since our last meeting. At the March lab meeting he asked whether people were still handing them out; they are, but they're not getting anything back. NTEP needs a software application that includes the policy, but we need to complete the policy first.

2020 Conclusion:

It was agreed that additional guidance would be beneficial for the application of the checklist. Either a guidance document or a white paper or both to accompany the checklist will be assigned as work items for a future Software Sector meeting.

2021 Conclusion:

The Sector will table this agenda item until the next meeting. Completing the Software Policy document will be the Priority.

4. NTEP Application for Software and Software-based Devices

Source:

NTEP Software Sector

Background:

The purpose of initiating this item was to identify issues, requirements and processes for type approving device applications, specifically for not-built-for-purpose software since it is now explicitly allowed. It was suggested that it may be useful to the labs to devise a separate submission form for software for these applications. What gets submitted? What requirements and mechanisms for submission should be available? Validation in the laboratories - all required subsystems shall be included to be able to simulate the system as installed.

Mr. Roach stated that if the software package being evaluated supports platforms/subsystems from multiple manufacturers, testing should be done using at least two platforms/subsystems. Scale laboratories and scale manufacturers indicated that this is not usually done for scale evaluations.

Since the NTEP Committee passed the related item at NCWM Annual Meeting we will continue to work on this. Mr. Truex indicated that we can move in this direction but felt that it was somewhat premature to develop this thoroughly now. At the point where the sector has developed checklist requirements, then we could move to perhaps add a subsection to current NTEP applications for applicable software. Refer to D-31.6.1. It was also agreed that there seems to be no reason for limiting the scope of this item to software-only applications, and hence all software/software-based devices could benefit from an enhanced application process. Hence the description of this agenda item was modified as shown in the marked-up heading.

Comments given at the meeting indicate that current practice does not require anything different for software / software-based devices compared to any other type approval. It was also noted that for international applications, OIML D-31.6.5 states, "The approval applicant is responsible for the provision of all the required equipment and components." This would likely also be the policy of NTEP.

Since the checklist is still being tried out by some of the laboratories, the sector is not quite ready to develop this fully. Some documentation that eventually might be required by applicants could include (from WELMEC doc. 7-2 Issue 4): This is the list of documents referred to in the checklist.

- A description of the software functions that are metrologically significant, meaning of the data, etc., e.g. an architecture diagram or flowchart.
- The software identification (version, revision, etc.) and how to view it.
- An overview of the security aspects of the operating system, e.g. protection, user accounts, privileges, etc.

Existing documentation required for obtaining certification is outlined in NCWM Pub. 14, administrative policy 9.1.7:

- Engineering specification
- Operating descriptions that characterize the type

NTEP evaluators already have the authority to request whatever documentation they need. We can provide them with a list of documents that we think would assist the evaluator in his job and also give the manufacturer a good idea of what they should be capable of providing.

Mr. Flocken suggested that this list could be added to administrative policy 9.1.7 in NCWM Pub. 14. Mr. Truex suggested it could also be added to the application.

If we combine the two lists, it might appear as something like this:

- A description of the software functions that are metrologically significant, meaning of the data, etc., e.g. an architecture diagram or flowchart.
- A description of the user interface, communication interface, menus, and dialogs.
- The software identification (version, revision, etc.) and how to view it.
- An overview of the system hardware, e.g. topology block diagram, type of computer(s), type of network, etc., if not described in the operating manual.
- An overview of the security aspects of the operating system, e.g. protection, user accounts, privileges, etc.
- The operating manual.
- Engineering specification.
- Operating descriptions that characterize the type.

A statement could be made along the lines of, “If not included in the operating manual, provide the following, as applicable.”

After the last sentence in 9.1.7, this could be added:

As part of the type evaluation submission, the following information should be provided for software-based devices:

- **A description of the software functions that are metrologically significant, meaning of the data, etc., e.g. an architecture diagram or flowchart.**
- **The software identification (version, revision, etc.) , how to view it, and how it is tied to the software.**

- **An overview of the security aspects of the operating system, e.g. protection, user accounts, privileges, etc.**

These documentation requirements will be considered as input for requirements that will eventually appear in NCWM Publication 14 and the application paperwork. Further work by the sector to develop the NCWM Publication 14 requirements is needed, after more input from the labs is gathered. The Sector recommends including the above bulleted list as an introduction to the checklist as part of our recommendation to include the checklist from agenda item 3 in NCWM Pub. 14. As a description of the accuracy of the measuring algorithms, simply declaring the type and class being aimed for may be sufficient. This list should reflect the needs of the labs for an evaluation. The bulleted list and the paragraph before it should be brought to the labs for an initial review and their input.

At the 2016 meeting, it seemed that the goal of this agenda item has somewhat shifted back to the original purpose, which is how do we communicate to applicants the expectations related to software-based devices? Ms. Lee suggested we review the OIML requirements for documentation. The comment was made from the floor that OIML may go further than we are currently prepared to recommend. Mr. Jordan expressed his opinion that moving forward with this item will be helpful for the labs. Mr. Flocken and Mr. Truex think this should be added to the Application section. If limited to that section, it shouldn't require approval from any of the other Sectors. Mr. Bliss suggested that it might be easier to provide examples that do not meet acceptable standards.

9.3 of Administrative Policy describes how to prepare for type evaluation. It might be better to add our suggested wording there instead of 9.1.7. Mr. Pettinato found a page on NCWM's website that describes what's needed for a type evaluation. He suggested we could add our checklist to the list of documents there. The NTEP Committee decides what's posted on the website.

Mr. Truex thinks we may need to come up with a list of software parameters and functions that are required to be protected. This will be a lot of work, but it may be the right answer, generating a separate section in NCWM Pub. 14 (and/or NIST HB 44) pertaining specifically to software.

The group discussed whether a list of sealable parameters should include device-specific parameters as well as software-specific parameters (e.g. CRC), or only the latter. The latter should be a fairly short list, including such parameters as:

- Replacing software
- Access to critical sections of the software

Historically, requirements for software-only applications haven't been as high as requirements for software applications that include hardware. The number of software-only applications has increased dramatically over the last few years.

The topic arose once again that we propose to the NTEP Committee we add a software specific section to NCWM Pub. 14. We may not know exactly what we want to include, but we could get the ball rolling by presenting a set of examples of situations that show the need. Mr. Truex thinks that the NTEP Committee will ask whether this needs a change to NIST HB 44. We need to address that in any sort of presentation we make to them. Mr. Dick Suiter suggested that we add a requirement to NIST HB 44 that the software be sealable, which is a bit of a difference from making changes to software evident. G-S.2. appears to address this in its mention of avoiding facilitation of fraud. The philosophy of sealing and method of sealing also cover this. We want to recommend adding a separate section to NCWM Pub. 14 for software, a list of sealable parameters, explain that going to the separate sectors is not working, and explain that manufacturers will need to address both our software section as well as application-specific portions of NCWM Pub. 14.

We provided an outline for the proposed NCWM Pub 14 section prior to the NTEP Committee meeting in two weeks, to gauge their opinion as to whether this is a viable approach. No action was taken until this year's Annual meeting, where the new NTEP Committee Chair guaranteed he would make it a priority to make progress on the proposal.

If the Software Sector does get its own section within NCWM Publication 14, the text may gain more notice if it is within that section rather than the general administrative policy; however, if it's within the general administrative policy, it wouldn't be hard to move it to the Software Sector's section of NCWM Pub. 14.

The Software Sector recommended that the following text be added as part of the existing 9.1.7 in NCWM Pub. 14 Administrative Policy:

Additionally, for software-based devices:

- **A description of the software functions and data, etc. that are metrologically significant, e.g. an architecture diagram or flowchart.**
- **The software identification (version, revision, etc.), how to view it, and how it is tied to the software.**
- **An overview of the security aspects of the software(s), e.g. protection, user accounts, privileges, platforms, etc.**

Mr. Flocken asked the NTEP lab evaluators in attendance what they need from the Software Sector to help them interpret the documentation they will receive from the manufacturers in response to this requirement.

Since we will be drafting a new section for NCWM Pub. 14 on software, we discussed where it should go within NCWM Pub. 14. It was suggested it may best fit as a standalone section following the Administrative Policy. It was noted that each specific device section for NCWM Pub. 14 might need a statement saying that manufacturers should reference the software section of NCWM Pub. 14. Mr. Darrell Flocken didn't think the software section will be big enough initially to support its own separate book. Ideally, the software section wouldn't cost extra.

Mr. Jeff Gibson was concerned about what level of detail some of this documentation would reach since, if it's too detailed, it might not be helpful for the NTEP evaluator. It might be too difficult to understand. Mr. Flocken mentioned that last year the thought had been that the Software Sector might give a presentation at the Lab meeting; however, that did not work out. He thought that it might be better to wait a bit longer. Perhaps after the draft for NCWM Pub. 14 is written and reviewed, that might be a better time for a presentation to the Labs.

2020 Discussion:

The above list of suggested documentation would be included within the new software section of NCWM Pub. 14.

Mr. Flocken commented that NTEP has been receiving a lot of software-only applications.

Note that we have included the language shown above in Section 3 of our draft NCWM Pub. 14 section already.

2020 Conclusion:

The Sector recommended a standalone section, following the Administrative Policy, if possible.

2021 Discussion:

In practice, there might not be just one application. Instead there might be device-specific applications, e.g. a scale software application. Instead of multiple new applications to address these related packages, perhaps it could be handled as a sub-section added to an existing application. There's a meeting coming up to address the direction of applications which will probably affect matters.

2021 Conclusion:

We will await the outcome of the upcoming NTEP meeting and progress accordingly. The assumption is that the proposed language will be part of the Software Policy document.

5. Training of Field Inspectors

Source:

NTEP Software Sector

Background:

During discussions at the 2009 NTEP Software Sector Meeting, the sector concluded that a new agenda item should be initiated specific to the training of field inspectors in relation to evaluating/validating software-based devices.

California has an Examination Procedure Outline (EPO) that begins to address this. Use California Handbook 112 as a pattern template for how it could read.

Items to be addressed:

- Certificate of Conformance
- Terminology (as related to software) beyond what is in NIST Handbook 44.
- Reference materials / information sources

System Verification Tests

NOTE: Item numbers 1 through 5 apply to both weighing and measuring devices. Numbers 6 and 7 are specific to weighing devices; while numbers 9 and 10 apply to measuring devices.

1. Identification. The identification (ID) tag may be on the back-room computer server and could be viewed on an identification screen on the computer monitor. The ID information may be displayed on a menu or identification screen. Though currently discouraged, some systems may be designed so the system must be shut down and reset to view the ID information. G-S.1 (1.10)
 - 1.1. Manufacturer.
 - 1.2. Model designation.
2. Provisions for sealing. G-S.8 [1.10]; S.1.11 [2.20]; S.2.2 [3.30]
 - 2.1. Verify sealing category of device (refer to Certificate of Approval for that system).
 - 2.2. Verify compliance with certificate.
3. Units of measure.
 - 3.1. A computer and printer interfaced to a digital indicator shall print all metrological values, intended to be the same, identically. G-S.5.2.2(a); G-S.5.1 [1.10]
 - 3.2. The unit of measure, such as lb, kg, oz, gal, qts, liters, or whatever is used, must agree.
4. Operational controls, indications and features (buttons and switches). Verify that application criteria and performance criteria are met (refer to Certificate of Approval).
 - 4.1. Any indication, operation, function or condition must not be represented in a manner that interferes with the interpretation of the indicated or printed values.
5. Indications and displays.
 - 5.1. Attempt to print a ticket. The recorded information must be accurate or the software must not process and print a ticket with erroneous data interpreted as a measured amount.

Weighing Devices

6. Motion detection.

6.1. For railway track, livestock, and vehicle scales apply or remove a test load of at least 15d while simultaneously operating a print button, push-button tare or push-button zero. A good way to do this is to try to print a ticket while pulling the weight truck or another vehicle onto the scale. Recorded values shall not differ from the static display by more than 3d. Perform the test at 10%, 50% and 100% of the maximum applied test load. S.2.5.1(a) [2.20]; EPO NO. 2-3, 2.4.

6.2. For all other scales, apply or remove at least 5d. Printed weight values must agree with the static weight within 1d and must exactly agree with other indications. S.2.5.4(b) [2.20]; EPO NO. 2-3, 2.4

7. Behind zero indication.

7.1 Apply a load in excess of the automatic zero setting mechanism (AZSM) and zero the scale. S.2.1.3 [2.20]; EPO NO. 2-3, 2.4, 2.5.2.

Example: On a vehicle scale have someone stand on the scale, then zero them off (AZSM is 3d). Remove the weight (person) and note the behind zero display (usually a minus weight value) or error condition.

7.2. Attempt to print a ticket. With a behind zero condition, (manually or mechanically operated) a negative number must not be printed as a positive value.

8. Over capacity.

8.1. Manually enter a gross weight if permissible or apply a test load in excess of 105% of the scale's capacity. S.1.7 [2.20]; S.1.12, UR.3.9 [2.20]

8.2. Attempt to print a weight ticket. A system must not print a ticket if the manually entered weight or load exceeds 105% of the scale capacity.

Measuring Devices

9. Motion detection.

9.1. Initiate flow through the measuring element. Attempt to print a ticket while the product is flowing through the measuring chamber. The device must not print while the indication is not stable. S.2.4.1. (3.30)

10. Over capacity.

10.1. Attempt to print a ticket in excess of the indicated capacity. A system must not print a ticket if the device is manually or mechanically operated in excess of the indicated value.

NOTE: Be aware of error codes on the indicator which may be interrupted as measured values.

Mr. Jordan (California Division of Measurement Standards) is already doing something similar, and he may be able to assist. Mr. Roach (California Division of Measurement Standards) will talk to him to see whether they are available. In addition, Mr. Parks (California Division of Measurement Standards) is based in Sacramento and a potential resource. If the meeting is held in Sacramento next year, they may be able to attend.

Mr. Truex pointed out that the PDC would also be a valuable resource on this subject. Mr. Pettinato (co-Chair) will contact them.

**NIST Handbook 112- Examination Procedure Outline for Commercial Weighing and Measuring Devices.*

The PDC is focused on training sessions at the moment, so it is unsure how much time they'd have to review this currently.

It was suggested by Mr. Truex and Mr. Flocken we make it part of our report as an attachment or an appendix of the meeting minutes. Then we can send out an email notifying the Software Sector members as to where to find it.

Alternatively, we could forward the document to the PDC Committee, tell them it was our starting point, and ask them for their suggestions.

The Sector would like to continue exploring means by which it can be of assistance in training of field inspectors as software and electronic systems become more and more prevalent in their daily tasks.

It was also suggested we contact Mr. Ross Anderson (paid consultant working with the PDC Committee) to ask his opinion on how the Software Sector could best proceed to assist in the training of field inspectors. The Sector chair, Mr. Pettinato, will act as primary point of contact for this communication.

Mr. Pettinato will contact Mr. Anderson regarding the PDC Committee, offering the Software Sector's assistance in continuing to develop training pertaining to software.

Mr. Pettinato is now a member of the PDC, so he will be able to pass on any suggestions we may make. The PDC is making an effort to provide training modules/videos accessible to anyone, so everyone is on the same page. Mr. Flocken suggested that as these training modules are updated, we should provide relevant input.

There is a national EPO from NIST Office of W&M, NIST HB112. Mr. Flocken recommended that we approach NIST regarding adding text regarding software. There are not EPO's for every equipment type. Mr. Harshman said that NIST HB112 is updated every year.

Mr. Flocken suggested that we attend the regional meetings to gain feedback on the sort of guidance the field inspectors need.

Mr. Harshman said that the most value to the field inspectors would be to identify for them different means that software can be used to manipulate the metrological system. In particular, how can someone attempt to cheat using software?

Mr. Bliss quickly reviewed NIST HB112 and reported that most it has to do with safety guidelines. Mr. Harshman said that there are numerous references to NIST HB44, which pertain more to the requirements for the inspections. NIST HB112 has appendices that include step-by-step procedures. We may want to consider crafting our own procedure for a new appendix.

Adam mentioned that Mexico and Brazil (and China, to an extent) have a requirement for manufacturers to supply an auditing document when they submit for a type approval. This would be a big change for NCWM.

It was suggested that perhaps a presentation on this subject at the main and regional NCWM meetings might be a good starting point. Mr. Pettinato suggested an entry in the NCWM newsletter, targeted to inspectors, would also help. The newsletter is submitted quarterly. Mr. Flocken confirmed that submissions for the next newsletter are due January 15th. A helpful newsletter article could describe how to find the CC for a system that includes software. Mr. Duncan volunteered to write a first draft.

Mr. Pettinato suggested that members of the Software Sector download and review NIST HB112, so that we can have a better idea regarding where we might best target additions to the text.

It was noted that recommendations for changes to NIST HB112 should go to Mrs. Butcher.

“California Handbook 112” does not sound right. Mr. John Roach thought it might actually be a reference to a NIST handbook. The CA EPO has not been revised since 2008. John Roach will email Mr. Pettinato a copy of the document for reference.

The PDC has not requested assistance yet, though Mr. Pettinato has offered it.

Mr. Katalinic asked how many field inspectors typically checked more than the certificates on the pump, its calibration, and the receipts. It sounds like they usually do not check the POS system. They generally rely upon the CC as an indication that the system has passed type approval and can thus be assumed to work properly. California is an exception. It sounds like Maryland has been diligent in checking version numbers and has, on at least one occasion, found a problem.

It is difficult to obtain feedback from the Regional meetings since representatives of the Software Sector do not necessarily attend those meetings. Another suggestion would be to include information in the newsletter. This actually came up as a suggestion in 2018 as well.

There had been a request for training on the NTEP process. Mr. Flocken has provided a presentation on this subject in the past, but it may be time for a refresher.

NIST does perform regional training for field inspectors. Sometimes they will bring a subject matter expert along to assist with the training. Mrs. Butcher listed several training courses that have been given recently.

Mrs. Butcher said that there have been requests for training schools in conjunction with the regional meetings. They’re sometimes also looking for presentations. Unfortunately, the majority of the attendees are not necessarily field inspectors.

Mr. Roach said that if we trained California’s main trainers, that information could trickle down to the field inspectors. Mr. Jeff Gibson said that a similar approach would work with Ohio.

It sounds like we would really benefit from someone making a presentation that could be disseminated. Mr. Konijnenburg and Ms. Tara Pandey volunteered to draft a presentation. Mr. Pettinato will meet with them to discuss what will need to be included. If we have time on Thursday after working on the NCWM Pub. 14 draft, we could consider working on this presentation.

Mrs. Butcher suggested recording a webinar.

A presentation on software versioning targeted field inspectors will be developed. Time permitting, we will use part of the second day as a working session to further the development of both the draft NCWM Pub. 14 Software document and an initial training presentation. If possible, when this presentation is given, we could record it and make it available for NIST or NCWM to use as online training material.

2020 Discussion:

Jim Pettinato mentioned that we do have a draft training presentation. It needs a bit of cleanup, and he hasn’t had a chance yet to share it with Tina Butcher.

Conclusion:

Mr. Pettinato volunteered to update the draft template and add some additional content (e.g. Example 3 in the presentation). He also mentioned that if any manufacturers want to submit additional examples, they could be included.

2021 Discussion:

Mr. Pettinato updated the training presentation. Additional examples would be welcome. Mr. Senneff volunteered to send Mr. Flocken / Mr. Pettinato his certificate.

Mr. Flocken recommends that we participate in the Lab Meeting and discuss this information with them.

2021 Conclusion:

Any additional information received regarding specific examples of the implementation of features to support field inspection in real-world devices will be incorporated into the work-in-progress presentation. If possible, we will arrange to have representation at the NTEP lab meeting as well.

6. New Publication 14 Section specific to Software

Background:

In the last few meetings, it has been recognized that there is significant difficulty aligning the various Sectors to maintain continuity and agreement in what changes go into each Sector's section of NCWM Publication 14. It also impedes the progress the Software Sector can make as we have to explain/defend our positions multiple times to different audiences. Hence, it was proposed while working on several of the carry-over items that a better process might be to segregate the software-specific requirements for type evaluation into a separate section, controlled by our Sector. Hence, the Sector agreed to forward a recommendation to the NTEP Committee to grant the Sector a software-specific section of NCWM Publication 14. Accompanying this recommendation was an outline of the potential content that would be included. Full text of the recommendation is below:

Current state:

There is no single Publication 14 device category in which to place software-specific requirements, design considerations related to software or test procedures specific to software. Since most modern measurement devices contain software, to appropriately address any concerns each section of Publication 14 must include all software considerations. Further, each device section has a different governing Sector, which makes the process of change an exercise in convincing each Sector to make needed additions while keeping those additions harmonized across Sectors; an effort that has proven very difficult and time consuming.

Since the Sectors don't meet simultaneously, often our submissions are accepted into each Sector's agenda, then one will adopt and another will have comments or reject the request, leading to inconsistent treatment of software between classes of device.

Internationally, OIML and WELMEC have adopted a similar approach by segregating software recommendations/requirements into a standalone document or documents, and that approach aids both evaluators and submitters by consolidating the requirements for software into a single section that can be shared with developers.

Software Sector Proposal:

Create a Publication 14 Software category, which includes requirements, considerations and test procedures common to all software-based devices, including software-only products. Such a section might include the following:

- 1. Models to be submitted for evaluation*
 - a. Determining scope of software to be approved*
 - i. Measurement and presentation*
 - ii. Calculations based on a measured value*
 - iii. Manual entry of measured value*
 - iv. Other*
 - b. Application of software may lead to additional Pub. 14 section consideration*
 - c. Minimum computing requirements statement*

2. *Software Identification*
 - a. *Appropriate means of 'marking' metrologically significant software*
 - b. *Software Separation and marking consequences*
 - c. *Relationship between software and software identifier*
 - d. *Presentation of software identifier*
 - i. *Example icons and menu text*
 - ii. *Exceptions*
3. *Protection against unauthorized software change*
 - a. *How is software "sealed"?*
 - b. *Remote software update considerations*
 - c. *Audit trail (if employed) requirements for software updates*
4. *Accuracy of data calculations*
 - a. *When to stop evaluating calculations & data manipulation*
5. *Software Evaluation Checklist*

Future Topics

1. *Distributed software considerations*
 - a. *Securing communications between metrologically significant distributed software modules or components of a system*

It seems likely that action may take place within the next year, and that means the Sector faces the task of quickly publishing the text of a new section. It is hoped that some time could be spent developing the outline further and identifying content already created/included in other sectors that would need to be migrated to the new Section.

Mr. James Cassidy assured Mr. Pettinato at the Annual Meeting this summer that they will take this under consideration. Mr. Flocken reported that the delay was due to not receiving input from the various sectors, either for or against. Mr. Flocken and Mr. Truex are urging the various members to voice their opinion.

Some of the other sections of NCWM Pub. 14 already have software requirements, and there have been some questions regarding whether this would be removed and placed in the new software section. Mr. Pettinato clarified that device-specific software requirements would remain where they are. The new software section would be more generic in nature.

SMA representatives indicated that their group may possibly review this proposal and come up with a position on the subject.

In the international community, there are general guidelines for software, such as in D-31, which are then adapted and implemented in the device-specific documents.

The starting point for the new software section in Pub. 14 would be the software checklist.

The new section would not be intended for software-only applications; it would be intended for anything metrological that has software.

There should be an introduction explaining when this section applies. “This code applies to the following... This code does not apply to the following...”

1. *Scope of application – any device of whatever type that contains software must meet the requirements herein. This includes both built-for-purpose and not-built-for-purpose software.*
2. *Materials to be submitted for evaluation*
 - a. *Determining which software modules need to be approved*
 - i. *Measurement and presentation*
 - ii. *Calculations based on a measured value*
 - iii. *Manual entry of measured value (e.g. measurement data rather than a measurement result)*
 - iv. *Other*
 - b. *Application of software may lead to additional Pub. 14 section consideration*
 - c. *Minimum computing requirements statement*
3. *Software Identification*
 - a. *Appropriate means of ‘marking’ metrologically significant software*
 - b. *Software Separation and marking consequences*
 - c. *Relationship between software and software identifier*
 - d. *Presentation of software identifier*
 - i. *Example icons and menu text*
 - ii. *Exceptions*
4. *Protection against unauthorized software change*
 - a. *How is software “sealed”?*
 - b. *Remote software update considerations, e.g. authentication*
 - c. *Audit trail (if employed) requirements for software updates*
5. *Accuracy of data calculations*
 - a. *When to stop evaluating calculations & data manipulation*
6. *Software Evaluation Checklist*

Gathering some of the text we’ve proposed all in one place:

- (3) The version or revision identifier shall be directly and inseparably linked to the software itself. The version or revision identifier may consist of more than one part, but at least one part shall be dedicated to the metrologically significant software.**
[Nonretroactive as of January 1, 201X]
(Added 20XX)

Additionally, for software-based devices:

- **A description of the software functions that are metrologically significant, meaning of the data, etc., e.g. an architecture diagram or flowchart.**
- **The software identification (version, revision, etc.) , how to view it, and how it is tied to the software.**
- **An overview of the security aspects of the software(s), e.g. protection, user accounts, privileges, platforms, etc.**

G-S.9. Metrologically Significant Software Updates

A software update that changes the metrologically significant software shall be considered a sealable event.

It was suggested that we explicitly state that if something does not affect the metrological operation of a software-based device, we do not care about it.

It was suggested that we include a description of what information would be logged in a category 3 audit trail that pertains to software updates. What about category 2? Mr. Flocken recommended that we stay away from requiring any particular type of sealing category. For example, “When using a category 3 audit trail, the following information should be...” This would be a description of the methods to comply with the existing sealing requirements, not creating new requirements.

Mexico has a very thorough description of what is required in their audit trails. We may want to review that at some point.

We should incorporate the description of software separation from Mr. Bliss’ presentation.

Mr. Pettinato suggested that we review some of the Software Sector meeting agendas from previous years for descriptions of exceptions and examples. Mr. Flocken will check to see if there is anything useful in the meeting agendas from the previous incarnation of the Software Sector. The D-31 document may be a good source of examples and explanations for issues to consider when performing a remote update.

Regarding the accuracy of calculations and at what point do you stop requiring evaluation, Mr. Flocken said that there is not a lot of existing documentation. The only guidance he thought NIST HB44 includes on accuracy is regarding rounding. That’s not the same thing as to when you stop the evaluation. “First final” is NTEP’s standard, but the states can be different, requiring more. “First final” is in the Administrative Policy. The agreement as to where the boundary line is drawn may come about as a result of the discussion during type evaluation, but we can hopefully provide some guidance. This can be especially confusing when data is being transmitted and calculations are being performed remote to where a measurement was originally taken. NIST HB44 deals particularly with “first final”, but how that interacts with NIST HB130 (method of sale) can introduce complications.

Measurement Canada considers similar issues, requiring W&M regulation to the equivalent of our “first final”. Anything past that point is not metrological.

The Sector concluded that we should organize and summarize the data captured in this brainstorming session on what will likely go into this new software section of NCWM Pub. 14.

Ms. Teri Gulke volunteered to write a first draft for the Software Sector members to review and amend. Once the Sector has approved a draft of representative example content, we could choose to include this as an amendment to the NTEP agenda items.

2020 Discussion:

We allocated a portion of the second day to a working session on the NCWM Pub. 14 draft section. The draft was circulated for comment, and several participants provided feedback which has been/will be incorporated.

As discussed earlier, Section 3 could benefit from being fleshed out further.

Mr. Roach said that they are receiving many software-based applications; however, they often have little to do with metrology – e.g. operational functions, agreement of indication.

Mr. Flocken pointed out that other Sectors NCWM Pub. 14 often start in manner similar to ours; however, they often end their various sections with a checkbox intended to show that the sections were acknowledged and/or applicable. Mr. Pettinato agreed that this sort of format could be useful, and it would be a good idea to match the other NCWM Pub. 14's formatting. Alternatively, checkboxes of that sort could be isolated in an appendix.

We further discussed the path forward for the software-specific section of NCWM Pub. 14. Mr. Flocken asked for opinions on whether we want it to be a stand-alone document, or included at the beginning of each document, or as part of (following) the Administrative Policy portion? Mr. Flocken recommended that we promote the Software Policy section as our own separate document; otherwise, it could prove complicated to make updates to our Pub. 14.

Also, it was noted that the Administrative Policy is free, but the other documents have fees. Mr. Pettinato recommended that we not charge for our document since it would be disseminated in conjunction with for-a-fee device-specific sections.

Consensus of the Sector is that we will have a separate document for our NCWM Pub. 14, and it will be free. We will leave it up to Mr. Flocken as to how to best distribute it – probably a free download from the website.

2020 Conclusion:

Mr. Flocken said that he'll review our NCWM Pub. 14 in detail over the next month to identify elements that do not currently have support in NIST HB44. Subsequent to that, Mr. Pettinato can work on a draft to address those concerns. Mr. Jan Konijnenburg suggested that the Pub. 14 Sections have references to NIST HB 44.

2021 Discussion:

It was pointed out that the title of the document should not include the word 'Administrative'. Instead we will use the title 'Software Technical Policy'. The draft document title and header needs to change to Software Technical Policy. We'll edit it offline since the document has some editing issues.

Section 3 requires training, so that the labs all have a common understanding of what is needed. Mr. Flocken isn't certain that the third bullet point may imply that the NTEP evaluators will be reading a flowchart in detail. He thinks the labs might not be ready for that, and the evaluation process doesn't go that deep for now. That doesn't mean that we should remove the bullet point since it's beneficial to have the submitters ensure that they've thought about the issues.

Mr. Tilley asked about remote software upgrades. Mr. Flocken replied that the software upgrade would need to be recorded in the audit trail as an event log entry. Mr. Konijnenburg explained the OIML approach used in Europe and how different countries can handle it differently. Mr. Ron Peasley also pointed out that it's device-specific in Europe, dependent on risk category.

Ms. Gulke will ask her company's marketing if they can provide additional examples of potential icons to use to access the version number.

2021 Conclusion:

Mr. Pettinato will make the identified edits to the draft Software Technical Policy and circulate to the Sector for comments.

7. Next Meeting

Background:

The sector is on a yearly schedule for NTEP Software Sector Meetings. Now that we've adopted a joint meeting system, the next Sector joint meeting will likely coincide with one of the remaining Sector meetings.

If we continue with our joint meetings, 2020 would be in conjunction with the Grain Analyzer Sector, and that will be August 11 in Kansas City. If we continue the cycle into 2021, that would be with the MDMD Sector.

It seems like it will make sense for 2020 to have a joint meeting; however, Mr. Flocken suggested that as time goes on, we may consider breaking off and having our own independent meetings. That may assist in getting feedback every year rather than having the different sectors waiting until it was time for their joint meeting with us.

If we continue with our joint meetings, 2022 would be in conjunction with the Weighing Sector.

2020 Discussion:

The 2021 meeting, if we continue with our cycle of joint meetings, would be concurrent with the MDMD Sector meeting. The NTEP Administrator will explore the various options, with the preference of meeting in 2021 in conjunction with the MDMD Sector. A joint meeting with the MDMD Sector would be in May 2021 in Columbus, Ohio. Mr. Flocken will work on getting us the precise date.

In advance of next year's meeting, perhaps we should poll the other Sectors as to their specific audit trail requirements and whether Appendices B&C should be removed from the other NCWM Pub. 14's and solely addressed in the Software Sector's NCWM Pub. 14.

2021 Discussion:

The date for the 2022 Weighing Sector meeting hasn't been picked yet, but it's usually the second or third week of August. The location of the meeting has yet to be determined. Also, the Belt Conveyor Sector's meeting will be merged with the Weighing Sector's meeting, causing it to probably extend an extra 4 hours.

We discussed whether it continues to make sense to conduct joint meetings. Ms. Gulke and Mr. Sprague Ackley (Digimarc) spoke in favor of continuing with joint meetings. There were no objections, so we will request a joint meeting in 2022.


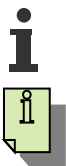







Mr. Konijnenburg suggested that we actually meet with the Weighing Sector in 2021 in San Antonio, TX (the location is still tentative), to speed up the process. Mr. Flocken said that this wouldn't add too much cost, and he'd have to get approval from the NTEP Committee. Alternatively, we could setup an additional Zoom meeting, or set up a Working Group. Other time commitments could be a problem.

2021 Conclusion:

We'll follow up after Mr. Flocken talks to the NTEP Committee, but the Sector requested to hold the next meeting in conjunction with the Weighing Sector in August 2022.

Appendix A

Acceptable Menu Text/Icons for Weights and Measures Information

<i>Permitted Menu Text examples</i>	<i>Permitted Icon shape examples</i>	<i>Essential characteristics</i>
Information Info	 	Top level menu text or icon <ul style="list-style-type: none"> Icon text is a lower case “i” with block serifs Text color may be light or dark but must contrast with the background color Icon may have a circular border Activation of this menu text/icon may invoke a second level menu text/icon that recalls metrology information.
Help ?	 	Top level menu text or icon <ul style="list-style-type: none"> Icon text is a question mark Text color may be light or dark but must contrast with the background color Icon may have a circular border Activation of this menu text/icon may invoke a second level menu text/icon that recalls metrology information.
Metrology Metrological Information	 	Top or second level menu text or icon <ul style="list-style-type: none"> Icon text is an upper case “M” Text color may be light or dark but must contrast with the background color Icon may have a circular, rectangular, or rounded rectangle border. If present, the activation of this menu text/icon must recall at a minimum the NTEP CC number.
NTEP Data N.T.E.P. Certificate		This one is debatable – what if the certificate is revoked? Does NTEP grant holders of CCs the right to display the logo on the device, or just in documentation?
Weights & Measures Info	 	

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Appendix B

2020 NIST OWM Report on International Activity

Summary of OIML D31 Revision Progress
To be presented at NCWM Software Sector Meeting, Denver, CO
Dr. Katya M. Delak
29 Aug 2019

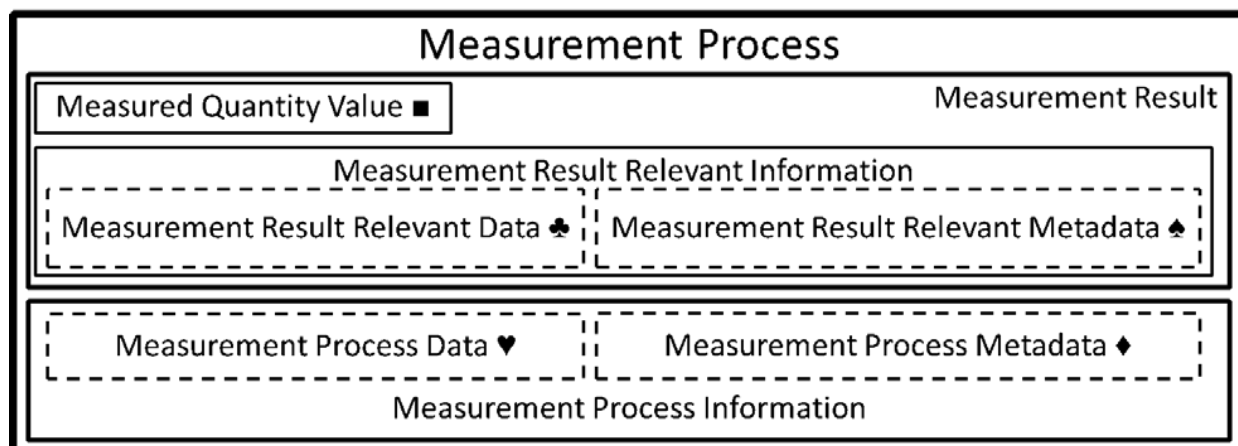
The International Organization of Legal Metrology (OIML) has been undertaking a revision of D-31: General Requirements for Software Controlled Measuring Instruments. This falls under Technical Committee 5, Subcommittee 2. Approval of the revision was taken at the CIML meeting in October 2016, and initial work began in spring of 2017.

Following a request for comments on the first committee draft (1CD), a project group meeting took place in Dordrecht, Netherlands in May 2018. The project group discussed the comments and worked to revise the 1CD. US delegates participating in person included Mr. Jan Konijnenburg, Ms. Teri Gulke, Mr. Jim Pettinato, and Dr. Katya Delak. Revisions from that meeting were put into 2CD (Second Committee Draft), which was voted on, pending terminology revisions, on February 6, 2019.

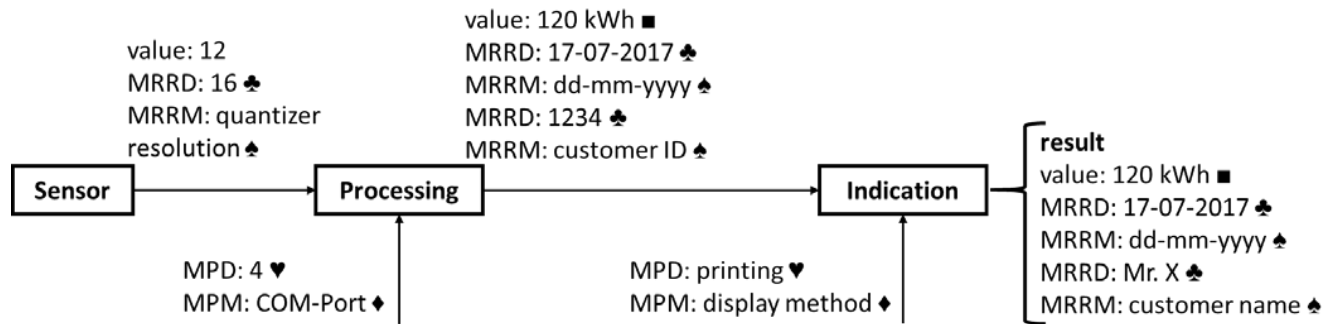
The Dordrecht meeting also resulted in the genesis on a subgroup on terminology (SG 3), which would work on reconciling contradictions in terminology used throughout the document and developing new terms that could be used consistently throughout the text. This group met virtually throughout the winter of 2018-2019. U.S. participants were Ms. Gulke and Dr. Delak. As a consequence of the federal government furlough, the U.S. participants missed one of these virtual meetings.

The terminology rubric was finalized by the subgroup and then used to modify the text of the 2CD in what was termed a “minor change procedure.” A schematic and explanation of this rubric was inserted as Appendix C in the 2CD. The minor change procedure did not require a full CD vote and had a shorter term for comment (one month, closing 04/09/2019). The U.S. argued that there were changes made to the document that seemed to be out of scope of a minor change procedure. We also belatedly argued that the terminology rubric was overly complicated. This admittedly contradicted our participation in the subgroup. In any case, the US was outvoted by the remaining members of the committee, and the revised 2CD was approved.

The document then moved to a CIML vote. After polling members of the USNWG, the U.S. decided to approve the document, despite concerns raised previously. D31 passed the CIML vote on July 11, 2019 and is expected to be approved at the CIML meeting that will take place October 21-25, 2019 in Bratislava, Slovakia.



New terminology detailed in D31, Annex C (Informative):



Exemplary flow chart to aid understanding of new terminology detailed in D31, Annex C (Informative):

2020 U.S. National Working Group consists of:

Dr. Katya Delak
Mr. Jim Pettinato
Ms. Teri Gulke
Mr. Jan Konijnenburg
Mr. Joe Porthouse
Mr. Shakila Xavier

2021 NIST OWM Report on International Activity

Summary of OIML D31 Revision Progress
Dr. Katya M. Delak

OIML Document D31: General Requirements for Software Controlled Measuring Instruments was approved for publication in October 2019 at the CIML meeting. It subsequently went into immediate revision to address new and evolving areas related to software-controlled instruments that were not addressed in the previous document. This revision is being carried out under OIML TC 5/SC 2/p 4, whose project lead is Marko Esche of PTB (Germany).

In the 2020-2021 timeframe, three separate subgroups met periodically to work on annexes and textual revisions related to artificial intelligence and machine learning (Subgroup 1), remote verification (Subgroup 2) and terminology (Subgroup 3). Proposed texts and changes were shared with the USNWG, but ultimately, most of the derived language was developed by other participating members of the subgroups: Germany, Switzerland, Australia, Czech Republic, Netherlands, Korea, Japan, and Slovenia.

At the same time, a first working draft (1WD) was circulated to project group members for comments, which closed on February 15th. This working draft provided an opportunity for primarily housekeeping revisions and editing of the existing D31 document.

The project group will meet this month next week, May 10-12th from 7:00 AM – 9:00 AM EDT. The meeting will cover the adjudication of comments to 1WD and will also provide an opportunity to the three subgroups to present their work.

2021 U.S. National Working Group consists of:

Dr. Katya Delak
Mr. Jim Pettinato
Ms. Teri Gulke
Mr. Jan Konijnenburg
Mr. Joe Porthouse

Mr. Shakila Xavier

Appendix F

National Type Evaluation Program (NTEP) Weighing Sector Meeting Summary

August 18, 2020
Virtual Meeting

INTRODUCTION

The charge of the NTEP Weighing Sector is important in providing appropriate type evaluation criteria based on specifications, tolerances and technical requirements of NIST Handbook 44 Sections 1.10. General Code, 2.20 Scales, 2.22 Automatic Bulk Weighing Systems, and 2.24 Automatic Weighing Systems. The Sector's recommendations will be presented to the National Type Evaluation Program (NTEP) Committee each January for approval and inclusion in NCWM Publication 14 *Technical Policy, Checklists, and Test Procedures* for national type evaluation.

The Sector is also called upon occasionally for technical expertise in addressing difficult NIST Handbook 44 issues on the agenda of National Conference on Weights and Measures (NCWM) Specifications and Tolerances (S&T) Committee. Sector membership includes industry, NTEP laboratory representatives, technical advisors and the NTEP Administrator. Meetings are held annually, or as needed and are open to all NCWM members and other registered parties.

Suggested revisions are shown in **bold face print** by ~~striking out~~ information to be deleted and underlining information to be added. Requirements that are proposed to be nonretroactive are printed in ***bold faced italics***.

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Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
ABWS	Automatic Bulk Weighing Systems	NCWM	National Conference on Weights and Measures
AREMA	American Railway Engineering Maintenance-of-Way Association	NIST	National Institute of Standards and Technology
AWS	Automatic Weighing Systems	NTEP	National Type Evaluation Program
CC	Certificate of Conformance	OIML	International Organization of Legal Metrology
DES	Digital Electronic Scales	OWM	Office of Weights and Measures
HB 44	NIST Handbook 44	R	Recommendation
IZSM	Initial Zero-Setting Mechanism	SS	National Type Evaluation Program Software Sector
LMD	Liquid Measuring Device	S&T	Specifications and Tolerances Committee
MC	Measurement Canada	SMA	Scale Manufacturers Association
MRA	Mutual Recognition Agreement	WS	National Type Evaluation Program Weighing Sector

Details of All Items
(In order by Reference Key)

CARRY-OVER ITEMS

1. Recommended Changes to NCWM Publication 14 Based on Actions at the 2020 NCWM Annual Meeting

Source:

2020 NCWM Annual Meeting

Due to the cancellation of the NCWM 2020 Annual Meeting, there no item for this section of the agenda.

Discussion/Conclusion:

Mr. Darrell Flocken (NTEP Administrator) reported that because of the cancellation of the 2020 NCWM Annual Meeting, there are no new items to discuss. It was reported that a reduced 2020 NCWM Annual Meeting will be held directly before the 2021 NCWM Interim Meeting in January 2021 and will focus only on agenda items with a Voting status. As there will be no possibility to hold a WS meeting after the voting and before the distribution of NCWM Publication 14, any adopted item will be included in the agenda for the 2021 WS meeting.

2. HB 44 Scales Code Paragraph S.1.2.2.3. Deactivation of a “d” resolution

Source:

2018 S&T Committee Final Report

This item remains in the carry-over section of this agenda as it is still an item being discussed at the National S&T Committee level. Several new proposals have been submitted, each addressing the concerns with the specification requiring $e = d$ when a Class I or II instrument is used in a direct sales application. An update on the S&T Committee Agenda item will be provide.

Information contained in the 2019 Weighing Sectors Meeting Summary is repeated below for reference.

Background/Discussion:

This item appeared on the 2018 Weighing Sector agenda as Item 1.a. and included not only a discussion of newly adopted Scales Code paragraph S.1.2.2.3. Deactivation of a “d” Resolution, but also a discussion on the interpretation of Scales Code paragraph S.1.2.2.2. Class I and II Scales used in Direct Sales. With respect to the paragraph S.1.2.2.3. Deactivation of a “d” Resolution, there were two recommendations to make changes to NCWM Publication 14 DES suggested by the NIST Technical Advisor, neither of which the Sector believed were immediately necessary after discussing the item. Thus, no changes were recommended by the Sector and the NIST Technical Advisor considers this portion of the item to be completed.

With regard to the Sector’s 2018 discussion on the interpretation of paragraph S.1.2.2.2., the NIST Technical Advisor provided OWM’s interpretation of how the paragraph applies. OWM’s interpretation of paragraph S.1.2.2.2. was that only the scale models having the same value of “d” and “e” would comply with paragraph S.1.2.2.2. as of its date of enforcement. That is, paragraph S.1.2.2.2. would not allow the disabling of the “d” resolution so that only “e” were displayed to enable a scale to be used in a direct sale application. The paragraph specifies the two values must be equal and the information provided on a CC confirms whether they are or aren’t equal. OWM’s interpretation of the paragraph prompted several members of the Sector to offer opinions on how they viewed the proper application of the paragraph and to raise questions concerning OWM’s interpretation of it. Members of the Sector concluded the intent of paragraph S.1.2.2.2. isn’t to require “e” and “d” to be the same value, but rather the paragraph should specify when “e” and “d” are different values, only the “e” value can be displayed on Class I and Class II scales used in a direct sale

application. As a result of the Sector’s technical position on this issue, Mr. Rick Harshman (NIST Technical Advisor) and Mr. Flocken agreed at the 2018 WS meeting to draft an NCWM Form 15 to amend the paragraph to reflect the Sector’s technical position on this issue.

During the discussion of this item at the 2018 WS meeting, it was also suggested that the mechanism to disable/enable the “d” resolution needed to be secured (i.e., behind whatever means of security is provided). A final concern relating to Sector’s plan to amend paragraph S.1.2.2.2. to allow for the disabling of the “d” resolution is the effect this might have on the display of values for scales that differentiate values of “d” and “e.”

See the 2018 Weighing Sector Meeting Summary for additional details concerning the Sector’s discussion of these two paragraphs and the conclusions reached by the Sector.

2019 NTEP Lab Meeting Discussion of Weighing Labs Item 2.

The 2019 NTEP Lab Meeting included an item on the Weighing Labs agenda to discuss the outcome of the 2018 Weighing Sector’s technical position on the application of paragraph S.1.2.2.2. Class I and II Scales used in Direct Sales. The NTEP weighing evaluators were asked to consider the following questions developed by the NIST Technical Advisor relating to the Weighing Sector’s technical position:

1. If disabling of the “d” resolution is permitted on a Class I and II scale in which the values of “d” and “e” are different to allow use of the scale in a direct sale application, what additional NTEP inspection/testing is needed to confirm the scale complies in both applications? (Note: One test thought to be necessary is a test to confirm a scale is rounding properly once the “d” resolution is disabled).
2. What are “display” requirements for the two applications given that Scales Code paragraph S.1.2.2.1. requires the differentiation of the two values when both are displayed.
3. How are evaluators to reference the two applications on a CC so field officials can readily tell from the CC the permissible applications?
4. How are “e” and “d” to be marked on the scale for each application?
5. Must the disabling feature be a sealable event (i.e., behind the seal)?
6. How might paragraph S.1.2.2.2. be changed to reflect and make clear the Sector’s interpretation.

OWM also noted that being able to disable the “d” resolution provides a means for service technicians to use the disabling feature to decrease scale resolution which can also change the outcome of a performance test (rejection versus approval).

Measurement Canada’s Technical Advisor to the 2019 NTEP Labs reported MC had previously evaluated a scale that a manufacturer wanted to be able to produce. The “d” resolution on this scale could be deactivated using a switch that was behind the security mechanism. Mr. Harshman indicated this is exactly what he believes U.S. scale manufacturers want to be able to do; yet, when this is done, digital rounding may be an issue as well as how the weight information on the scale will be displayed (given the “d” resolution is required to be differentiated from the “e” resolution if “e” and “d” are continuously displayed during normal operation). An additional concern is how field officials will be able to easily determine if a CC issued for the device includes both applications? Mr. Flocken suggested manufacturers could make evident the two applications by listing each separately on the CC or including text in the “Standards Features and Options” block on the CC indicating the two different applications.

Mr. Flocken also commented during the 2019 NTEP Lab Meeting he believed the WS’s technical position on this issue would not necessarily require a change to Scales Code paragraph S.1.2.2.2. Class I and II Scales Used in Direct Sales. A change to NCWM Publication 14 to allow for the deactivation of the “d” resolution is all that would be needed to include: 1) added test criteria that verifies proper rounding; 2) appropriate display of information; and 3) that the switch is located behind the sealing mechanism. Mr. Harshman concurred with Mr. Flocken’s view and agreed to

develop a 2019 Weighing Sector proposal to amend NCWM Publication 14 rather than draft proposed changes to paragraph S.1.2.2.2. as was previously agreed at the 2018 WS meeting.

Recommendation:

A discussion on the future implementation of Scales Code paragraph S.1.2.2.2. Class I and II Scales used in Direct Sales is a new item on the Weighing Sector's 2019 agenda (i.e., Additional Item 8) and may result in a Sector recommendation to postpone implementation of the paragraph and/or amendments to the paragraph. For this reason, the NIST Technical Advisor recommends discussing everything related to paragraph S.1.2.2.2. as part of additional Item 8. Regarding Mr. Harshman's agreement at the 2019 NTEP Lab Meeting to develop a 2019 WS proposal to amend NCWM Publication 14, this work has not been completed because a Sector discussion of additional Item 8 may result in there being no immediate need to amend NCWM Publication 14 DES.

Since it was decided at the 2019 NTEP Lab Meeting, changes to paragraph S.1.2.2.2. are not needed, the NIST Technical Advisor considers Item 2 of this agenda concluded. The item will not be carried over onto next year's WS agenda.

Discussion/Conclusion:

This item was combined and discussed with New Item 8 of the 2019 WS agenda since they relate to the same issue; yet propose different Sector actions/recommendations. With respect to this particular item, Mr. Harshman explained he purposely had not drafted a 2019 WS proposal to amend NCWM Publication 14 as agreed at the 2019 NTEP Lab Meeting because he knew the outcome of a WS discussion of additional Item 8 of this agenda may result in a recommendation to develop a WS proposal to amend NIST HB 44 Scales Code paragraph S.1.2.2.2. Class I and II Scales used in Direct Sales or postpone its implementation. If the Sector were to agree to either of these actions after discussing the concern detailed in Additional Item 8, there would be no immediate need to develop a WS proposal to address the disabling of the "d" resolution on Class I and II scales in which "d" and "e" are different values in NCWM Publication 14. Because neither of these actions resulted from the Sector discussion of Additional Item 8, members of the Sector agreed Mr. Harshman should move forward with the development of a 2020 WS proposal to amend the DES part of NCWM Publication 14 to allow for the deactivation of the "d" resolution on Class I and II scales in which "e" and "d" are different values. It was also agreed the draft proposal should address all concerns made known at the 2019 NTEP Lab meeting as reported in the Background/Discussion portion of this item.

Mr. Harshman agreed to draft a proposal on behalf of the 2019 WS members and present the draft to Mr. Flocken and Mr. Rob Upright (Chairman of the 2019 WS) for final review.

2020 Weighing Sector Meeting:

During the 2020 WS Meeting, Mr. Harshman reported the following.

At the 2020 NCWM Interim Meeting the S&T Committee accepted New York's proposal to delete NIST Handbook 44 Scales Code Paragraph S.1.2.2.3. Deactivation of a "d" resolution and paragraph S.1.2.2.2. Class I and II Scales Used in Direct Sales and made it a Voting item.

These two paragraphs address two entirely different concerns regarding a "d" resolution that differs from an "e" resolution on Class I and II scales. Mr. Harshman assumes that New York believed these two paragraphs were somehow connected or were added to the handbook to address a similar issue, which is not at all the case.

Members of OWM's Legal Metrology Devices Program drafted paragraph S.1.2.2.3. in 2018 after it was brought to our attention there existed some Class II scales (and perhaps Class I also) that if the d resolution were turned off or deactivated, the scale would not round e values properly. This remains an ongoing concern and explains the need for this paragraph to remain in the handbook.

3. Implementation of NIST Handbook 44 Scales Code paragraph S.1.2.2.2. Class I and II Scales Used in Direct Sales

Source:

Mettler-Toledo, LLC

This item remains in the Carry-over section of this agenda as it deals with the same basic issue as in Item 2 of this document and it is still an item being discussed at the National S&T Committee level. Several new proposals have been submitted, each addressing the concerns with the specification requiring $e = d$ when a Class I or II instrument is used in a direct sales application. An update on the S&T Committee agenda item will be provide.

Information contained in the 2019 Weighing Sectors Meeting Summary is repeated below for reference.

Background

NIST Handbook 44 Scales Code paragraph S.1.2.2.2. Class I and II Scales used in Direct Sales was added to the Handbook in 2017 and will become enforceable for new scales going on the market in January 2020 with a retroactive date of January 2023. This change was made primarily due to the direct sales of cannabis to customers in several states and the scale operators were inexperienced with the higher precision scales and the need to calculate price only based on values of "e."

An unintended consequence is there are other applications, such as jewelry and gold, where Class I and II scales with " $d \neq e$ " are used by experienced operators and it is not clear whether or not the use of these scales is now permitted in direct sales. Discussions with several states show there is a lack of consistency in how these states interpret "direct sales" as it relates to these applications.

This new specification, if not modified, will result in Class I and II scales that support " $d = e$ " for direct sales but are more expensive in order to provide the same suitability for use as is available in " $d \neq e$ " scales. This and the concern that current scales will not be suitable after 2023 will be a burden for those in the jewelry business.

Recommendation:

Further discussion is requested with the Weighing Sector to explore the proposed recommendations shown in the text boxes below and other alternatives.

The two recommendations are as follows:

1. Amend NIST Handbook 44 Scales Code paragraph S.1.2.2.2. Class I and II Scales Used in Direct Sales as follows:

S.1.2.2.2. Class I and II Scales Used in Direct Sales. – When accuracy Class I and II scales are used in direct sale applications ~~the value of the displayed division "d" shall be equal to the value of the verification scale interval "e,"~~ and "e" does not equal "d," the commercial transaction shall be calculated based on the value of the verification scale interval "e" and not on the value of the displayed division "d."
[Nonretroactive as of January 1, 2020; to become retroactive as of January 1, 2023]
(Added 2017)

2. Amend the current NIST Handbook 44 Appendix D definition of "direct sale" as follows:

direct sale. – A sale in which both parties in the transaction are present when the quantity is being determined. An unattended automated or customer-operated weighing or measuring system is considered to represent the device/business owner in transactions involving an unattended device. [1.10]. **Verification of previously weighed and marked items is not considered a direct sale.**
(Amended 1993 ~~and 20XX~~)

NIST Technical Advisor’s note and additional recommendation: *Should the Sector, after considering the changes proposed by this item, conclude the changes are not needed or are inappropriate, it is recommended the Sector develop and propose changes to NCWM Publication 14 DES to allow for the deactivation of the “d” resolution to include:*

- *added test criteria that verifies proper rounding when the d resolution has been deactivated;*
- *appropriate display of information; and*
- *that the switch to activate/deactivate the “d” resolution is located/secured behind the sealing mechanism.*

Discussion/Conclusion:

Mr. Russ Vires (Mettler-Toledo, LLC) announced Mettler Toledo had updated its NCWM Form 15 proposal since the 2019 WS agenda had been circulated to members. As a result, the two recommended changes proposed by Mettler Toledo in the agenda are no longer valid. The following represents the most current changes being proposed by Mettler Toledo, LLC and will be considered by the four Regional Weights and Measures Associations when they meet in the fall of 2019:

S.1.2.2.2. Class I and II Scales Used in Direct Sales. – Except for jewelers' scales, when accuracy Class I and II scales are used in direct sale applications the value of the displayed division “d” shall be equal to the value of the verification scale interval “e.”

[Nonretroactive as of January 1, 2020; ~~to become retroactive as of January 1, 2023]~~

This updated proposal was projected onto a screen upon Mr. Vires announcement so members of the WS could consider its merits during the discussion of this item.

Mr. Marc Wolff (Mettler-Toledo, LLC) gave a very informative presentation on the operational characteristics of Class I & II scales with regard to scale resolution and the display of “e” and “d” values (his presentation slides have been inserted as an attachment to this report and are also posted on NCWM’s website). His presentation focused on a very important concern Mettler Toledo has regarding the implementation of NIST HB 44 Scales Code paragraph S.1.2.2.2. Class I and II Scales Used in Direct Sales. Of particular concern is the effect that the nonretroactive and retroactive dates of January 1, 2020 and January 1, 2023, respectively, are having on Mettler Toledo’s marketing of Class II scales to the jewelry industry. Because this requirement becomes enforceable in only a few short months and then becomes retroactive in just a little over three years (Jan. 1, 2023), it is creating uncertainty in the marketplace. This uncertainty has led scale distributors of Mettler Toledo products to delay purchasing new Class II scales until it becomes clearer how weights and measures officials are going to apply the requirement once it becomes enforceable. The increased cost of the Class II scales suitable for this application having to comply with paragraph S.1.2.2.2. is thought to be fueling this market uncertainty. An Accuracy Class II scale with maximum capacity of 620 g and both “e” and “d” equal to 0.01 g costs more than two and a half (2.5) times that of an Accuracy Class II scale with the same capacity (620 g) with “e” equal to 0.1 g and “d” equal to 0.01 g.

Mr. Wolff offered the following justification for proposing jewelers’ scales being exempt from paragraph S.1.2.2.2.:

- The buying and selling of jewelry (gemstones in particular) typically involves two companies and it is expected each will weigh the product;
- Weighing of gemstones (for trade) requires a Class I scale with the indication in millicarats (mct), 1 mct equals 0.2 mg (0.0002 g). Additionally, the value of “e” is required to be equal to 10 “d” on these scales;
- Accuracy Class I single-range scales with the value of “e” equal to “d” are not currently available from any scale manufacturer;
- Accuracy Class I scales are not permitted for use in direct sale applications outside the U.S.

Mr. Vires reported discussions with several states indicate there may be confusion in how paragraph S.1.2.2.2. is interpreted as it relates to jewelers' scales. Mr. Eric Golden (Cardinal Scale Manufacturing Co.) asked if a message could be posted on the Weights and Measures Directors' listserv asking for input on how this might be enforced?

Mr. Harshman reported there isn't any way to prevent paragraph S.1.2.2.2. from becoming enforceable to new equipment placed into service as of January 1, 2020. One action the Sector could take is to develop a Sector position on the issue, providing members could agree on one, and then communicate that position to the different states using the Weights and Measures Directors' listserv. If members of the Sector cannot agree on a position, the Sector's reporting that there was no agreement on a solution to this issue (no consensus reached) might alone be enough to provide indication to the community that there is a problem with the upcoming implementation of this paragraph. One other option might be to propose extending the dates of enforcement of paragraph S.1.2.2.2. if other Sector members believe more time would be helpful in alleviating the concern.

This ongoing discussion prompted other members to provide their opinions of the paragraph, the changes being proposed by Mettler Toledo, and acceptable/unacceptable applications of a Class II scale with different values of "e" and "d." Mr. Flocken and Mr. Loren Minnich (Kansas) indicated they felt the S&T Committee had made a mistake when forwarding existing paragraph S.1.2.2.2. as a Voting item. This requirement should not have been drafted as a Specification Requirement. They advocated deleting paragraph S.1.2.2.2. and replacing it with a User Requirement. As a User Requirement it becomes more of an issue involving enforcement rather than the design of a device. Mr. Minnich noted there are several new items on the agenda of the S&T Committees of the Regional Associations proposing changes relating to this issue in the coming year. One of those items proposes deleting the current Specification Requirement and replacing it with a User Requirement.

Mr. Harshman commented he was not in favor of the exemption proposed by Mettler-Toledo. There should be only one scale resolution on scales used in a direct sale application. This should apply across the board regardless of the commodity being weighed. He noted "e" values do not round when "e" and "d" are different values on a Class I and II scale. Both, therefore, must be read to obtain an accurate weight determination. You cannot simply ignore "d" because it is the "d" value that provides indication of where an applied load happens to fall between two increments of "e." What prompted Oregon (in 2017) to draft paragraph S.1.2.2.2. was that Inspectors in the State discovered some scale operators reading just the "e" value and others reading both "e" and "d." It was very confusing. OIML R-76 does not permit a second resolution on scales used for direct sale. Mr. Harshman also commented he agreed with Mr. Flocken and Mr. Minnich that the requirement should have been drafted as a User Requirement.

Mr. Vires followed up by reminding everyone there are already some requirements in HB 44 Scales Code that are specifically applied to "jewelers' scales." He stated it was his hope in submitting this item to the Sector that members could agree on a possible solution and a Sector position could be attained and then communicated to the states in hopes of diffusing much of the uncertainty in the marketplace.

Mr. Rob Upright (WS Chairman) asked the group if there was interest in seeing if members could agree on a position. He first elected, however, to poll the different members of the Sector to determine whether they supported Mettler-Toledo's proposal. It became evident during this process that agreement could not be reached on a WS position.

Mr. Flocken, acknowledging an earlier statement made by Mr. Harshman, suggested the WS could issue a statement of sorts stating that there has not been any consensus reached regarding this issue. Alternatively, the Sector might simply remain silent. It could be beneficial to wait and see what comments come out of the fall Regional Association Meetings.

In conclusion, members of the Sector agreed there is no consensus for a resolution of this issue; however, there was general agreement paragraph S.1.2.2.2. would be better suited as a User Requirement.

2020 Weighing Sector Meeting:

During the 2020 WS Meeting, Mr. Flocken reported that this item remained on the WS agenda because of the canceled 2020 NCWM Annual Meeting. It was also reported that this item was given a Withdrawn status coming out of the 2020 NCWM Interim Meeting. The Withdrawn status was assigned as a third proposal from the State of New York (S&T agenda item SCL 20.10) recommended the removal of NIST Handbook 44, Scales Code, paragraphs S.1.2.2.2 and S.1.2.2.3. This item was given a Voting status. If item SCL 20.10 is adopted, this item addresses a

concern that no longer exists. However, if item SCL 20.10 is defeated, the submitter may want to resubmit this proposal.

4. Verifying the Performance Adequacy of a Reference Scale

Source:

NIST OWM's Legal Metrology Devices Group

Background

At the 2019 NCWM Annual Meeting, the NCWM adopted amendments to the Belt-Conveyor Scales Systems (BCSS) Code, including adding a new Accuracy Class 0.1 and accompanying Note paragraph that requires the quantity of material used to conduct a material test on a Class 0.1 BCSS to be weighed on a reference scale to an accuracy within 0.035% (which equates to 0.35 lb/1,000 of test load). The tolerance to be applied to an Accuracy Class 0.1 BCSS is $\pm 0.1\%$ of the test load. OWM has some questions regarding the means of verifying the accuracy of some scales using procedures that will ensure when those scales are used to weigh material for a material test of a Class 0.1 BCSS, the actual mass of the material is within the 0.035% specified. Mr. John Barton (NIST OWM) and Mr. Harshman will provide an overview of some test procedures being developed by OWM that can hopefully be used to confirm the adequacy of the reference scale (when used as a mass comparator) so that the scale can then be used to weigh reference material to within the 0.035 % accuracy specified.

Although the NTEP Belt-Conveyor Scale Sector will be considering recommended changes to the Belt-Conveyor Scale and Weigh-Belt Systems portion of NCWM Publication 14 in the near future, it is thought members of the Weighing Sector might find this topic of interest because reference scales are used in other applications and may need to be tested similarly to determine their adequacy for use in weighing material. For example, reference scales are used to verify the performance of CNG Retail-Motor Fuel Dispensers.

Discussion/Conclusion:

Mr. Barton provided an overview of some of the changes that were adopted at the 2019 NCWM Annual Meeting affecting the Belt-Conveyor Scales Systems (BCSS) Code. Most notably are new requirements intended to address a 0.1 Accuracy Class BCSS. As its accuracy class implies, the tolerance to be applied to a 0.1 Accuracy Class BCSS will be $\pm 0.1\%$ of the test load, which is the level of accuracy some manufacturers of weigh-belts (a type of belt-conveyor scale system) are claiming their systems can meet. Measurement Canada has evaluated at least one of these systems and found its performance to be within the specified tolerance.

A new Notes paragraph being added to the BCSS Code in 2020 requires the quantity of material used to conduct a material test on a 0.1 Accuracy Class BSCS to be weighed on a reference scale to an accuracy of 0.35 %. This item was added to the Weighing Sector's 2019 agenda to solicit input from members on how best to establish the test loads needed to be able to test these systems in a field environment given the degree of accuracy required of the material. Scales performing to within this level of accuracy (0.035 %) may not be available or the procedures typically used to verify the accuracy of some scale types may not be adequate to ensure that when product for a material test is weighed on those scales it will be within the 0.035 % specified. For example, a section test on a vehicle scale using 25 000 lb of certified test weight and each section determined to be within 0.035% of the applied test load doesn't ensure axle-loads of vehicles positioned on these same sections weighing 35 000 lb will also be within 0.035% of their true value. Additionally, influences from environmental conditions may result in the need to postpone tests to a time when more favorable conditions exist. Measurement Canada's testing of one of these systems involved using a static railroad scale as a mass comparator and two test cars of known mass; one approximately equal to the weight of an empty railcar, and the other, approximately equal the weight of a railcar filled with material.

NTEP may soon begin receiving applications for type evaluations of these higher accuracy (0.1 %) BCSSs. It too will need test procedures for verifying the adequacy of a reference scale used to weigh the material used for testing these higher accuracy systems. Current NCWM Publication 14 BCSS procedures for verifying the adequacy of a reference scale are intended for reference scales used to weigh product for a material test of BCSS having an applicable tolerance of $\pm 0.25\%$. These current procedures are inadequate for use in verifying the adequacy of a reference scales used for weighing product for a material test of a BCSS system with a $\pm 0.1\%$ applicable tolerance.

The development of adequate test procedures for the reference scale will be a main focus of an upcoming meeting of the NTEP Belt-Conveyor Scale Sector. The meeting is planned for October 2019.

During the discussion of this item, Mr. Pascal Turgeon (Measurement Canada) and Mr. Zach Tripoulas (MD NTEP evaluator) offered to provide assistance in the development of the procedures.

2020 Weighing Sector Meeting:

During the 2020 WS Meeting, Mr. Barton updated the participants on the ongoing efforts of addressing the best approach to defining the needs and performance level of a reference scale needed to perform testing on a Class 0.1 Belt Conveyor Scale. Mr. Barton also mentioned his appreciation for the information and documentation sharing offered by Measurement Canada. Mr. Barton reported that he hopes to hold a meeting of the Work Group in the late September time frame to keep this item moving forward.

NEW ITEMS

5. Marking the Concentrated Load Capacity (CLC) When Two Vehicle Scale Platforms are Installed in a Side-By-Side Configuration

Source:

Mettler-Toledo, LLC

Background:

There is no clear information in Pub 14 or Handbook 44 for CLC marking requirements for side-by-side vehicle scale when used as:

1. Side-by-side complete scale with total weight summed
2. Side-by-side not complete scale where one side used as weigh in, the other as weigh out

Recommendation:

Mettler Toledo is recommending Publication 14 be revised as shown in the box below.

5. Additional Marking Requirements- Livestock, Vehicle, and Railway Track Scales

Code Reference: G-S.1., G-S.5.1., S.6.3, S.6.4. and S.6.5.

5.1. The section capacity of a railway track and livestock scale shall be marked on or adjacent to the identification badge on the indicating element. The section capacity shall be prefaced by the words "Section Capacity" or an abbreviation of that term. Abbreviations shall be "Sec Cap" or "Sec C." All capital letters and periods may be used.

5.2. Vehicle or axle-load, scale shall be marked with the concentrated load capacity of the scale. Such marking shall be identified as "concentrated load capacity" or by the abbreviation "CLC" and shall be accurately and conspicuously shown:

5.2.1. On, or adjacent to, the identification or nomenclature plate that is attached to the indicating element of the scale. **AND**

5.2.2. On the load-receiving element of the scale. These capacity markings shall be added to the load-receiving element of any such scale not previously marked at the time of modification.

5.3. The marked nominal capacity on all vehicle and axle-load scales shall not exceed the concentrated load capacity times the quantity of the number of sections in the scale minus 0.5.

5.4. Combination vehicle/railway track and combination vehicle/livestock scales shall be marked with (1) the nominal capacity and CLC for vehicle weighing, and (2) the nominal capacity and section capacity for railway and livestock weighing. The emin for both vehicle weighing and railway weighing shall also be marked.

Note: Combination scales (vehicle/railway track and vehicle/livestock) shall be marked with all required information

5.5. The marked concentrated load capacity (CLC) for a side-by-side vehicle scale:

5.5.1. Complete scale side-by-side would be marked with 2 x CLC that is listed on CoC

5.5.2. Side-by-side not a complete scale each side would be marked with CLC that is listed on CoC

5.56. The nominal scale capacity for railway track scales shall not exceed the lesser of (1) The sum of the Weigh Module Capacities as shown in Table S.6.4.M. or Table S.6.4, or (2) the Rated Sectional Capacity (RSC) multiplied by the Number of Sections (Ns) minus the Number of Dead Spaces (Nd) minus 0.5. As a formula this is stated as $RSC \times (Ns - Nd - 0.5)$, or (3) 290 300 kg (640,000 lb)

NTEP Administrators Note: NIST Handbook 44, Scales Code, Section S.6.1. mentions that the CLC value is used in the formula as a variable in determining the Nominal Capacity of a vehicle or axle load scale. The decision to move forward with this proposal must consider any impact to the application and use of this formula.

S.6.1. Nominal Capacity; Vehicle and Axle-Load Scales. – For all vehicle and axle-load scale, the marked nominal capacity shall not exceed the concentrated load capacity (CLC) times the quantity of the number of sections in the scale – 0.5.

As a formula, this is stated as: $\text{nominal capacity} < \text{CLC} \times (N - 0.5)$

Where N = the number of sections in the scale.

[Nonretroactive as of January 1, 1989]

Discussion/Conclusion:

This item was introduced, and the discussion was led by Mr. Scott Davidson (Mettler-Toledo, LLC). Mr. Davidson mentioned that there was no clear direction regarding the marking of the Concentrated Load Capacity CLC value when a two-platform vehicle scale was used to weight off road or oversize vehicles where the vehicle is positioned on both weighing/load receiving elements (w/lre). The possibilities were that each w/lre was marked as a separate device with the CLC and capacity values within the value range stated on the NTEP Certificate of Conformance, or the two devices were considered one complete device and the CLC and capacity values would be marked as two times that of a single device.

During the discussion, comments were heard from Mr. Golden (Cardinal Scale Manufacturing Co.), Mr. Harshman, and Mr. Minnich with all stating that in a side-by-side installation, as described, each w/lre would be considered a separate device and should be marked with individual CLC and capacity values. It was also noted that this will require the identification of each w/lre when applying the CLC and capacity marking on the indicating element.

Based on the agreement that each w/lre should be marked as a separate and individual device, it was noted that no change to paragraph 5. ***Additional Marking Requirements- Livestock, Vehicle, and Railway Track Scales*** was

Needed, however; it was agreed that some clarification of the marking requirements would be of value. To support this, the following change to paragraph 5.2. was agreed to. This change will be included in the 2021 Edition of NCWM Publication 14.

5. Additional Marking Requirements- Livestock, Vehicle, and Railway Track Scales

Code Reference: G-S.1., G-S.5.1., S.6.3, S.6.4. and S.6.5.

5.1. The section capacity of a railway track and livestock scale shall be marked on or adjacent to the identification badge on the indicating element. The section capacity shall be prefaced by the words "Section Capacity" or an abbreviation of that term. Abbreviations shall be "Sec Cap" or "Sec C." All capital letters and periods may be used.

5.2. Vehicle or axle-load, scale shall be marked with the concentrated load capacity of each load-receiving element, the scale. Such marking shall be identified as "concentrated load capacity" or by the abbreviation "CLC" and shall be accurately and conspicuously shown.

5.2.1. On, or adjacent to, the identification or nomenclature plate that is attached to the indicating element of the scale. **AND**

5.2.2. On the load-receiving element of the scale. These capacity markings shall be added to the load-receiving element of any such scale not previously marked at the time of modification.

5.3. The marked nominal capacity on all vehicle and axle-load scales shall not exceed the concentrated load capacity times the quantity of the number of sections in the scale minus 0.5.

5.4. Combination vehicle/railway track and combination vehicle/livestock scales shall be marked with (1) the nominal capacity and CLC for vehicle weighing, and (2) the nominal capacity and section capacity for railway and livestock weighing. The emin for both vehicle weighing and railway weighing shall also be marked.

Note: Combination scales (vehicle/railway track and vehicle/livestock) shall be marked with all required information

5.5. The nominal scale capacity for railway track scales shall not exceed the lesser of (1) The sum of the Weigh Module Capacities as shown in Table S.6.4.M. or Table S.6.4, or (2) the Rated Sectional Capacity (RSC) multiplied by the Number of Sections (Ns) minus the Number of Dead Spaces (Nd) minus 0.5. As a formula this is stated as $RSC \times (Ns - Nd - 0.5)$, or (3) 290 300 kg (640,000 lb)

6. Change in Meeting Documentation Development Process

Source:

NTEP Administrator

Background:

The responsibility for the development of the meeting agenda and summary documents has changed. Beginning with the 2021 Meeting a member of the Weighing Sector, with the help of NTEP personnel, will assume this responsibility. This change is based on direction from the NTEP Committee and the NCWM Board of Directors and aligns the responsibility with the current action of other Sectors, Work Groups, and Task Groups.

During the transition period from now until the 2021 Meeting, the NTEP Administrator will create the meeting agenda and complete a meeting summary report for distribution to the Sector Members, at a later date.

In addition to the assignment of the individual or individuals responsible for these documents, Mr. Flocken would encourage the Sector to develop a timeline document to assist the individual in the ability to develop a meeting agenda in a timely manner and with the least impact to their current responsibilities. Due to meeting time constraints, Mr. Flocken would offer my assistance to develop this timeline document offline, with the distribution, review, and acceptance of the document to occur within six months from the adjournment of this meeting. A few items to be addressed in this timeline document would be:

1. A deadline for the submittal of new proposals, and reports from subgroups with specific assigned tasks,
2. A deadline for the distribution of the agenda and summary documents.

Mr. Flocken suggest that the timeline document be placed on the Weighing Sector home page on the NCWM website.

Discussion/Conclusion:

As reported at the 2020 NCWM Interim in Riverside, California, NIST and the NCWM Board of Directors agreed to a change in the responsibilities for the development of the meeting agenda and the writing of the meeting summary. This change removes these tasks from the NIST Technical Advisor and moves them to the responsibility of the individual Sectors. To move forward with this change, the Sector Members are tasked with creating a position assigned to an individual who will be responsible for creating these documents. Mr. Flocken pointed out that the NIST and NTEP Technical Advisors will support the individual in these tasks. As this may be the first you heard of this change, the NTEP Technical Advisor agreed to write the Meeting Summary for the 2020 meeting.

During the discussion, Mr. Loren Minnich (Kansas) agreed to accept this task. Ms. Tina Butcher (NIST, OWM) and Mr. Darrell Flocken (NTEP Administrator) provided comments on how this is a shared task at the National S&T Committee for the writing of their meeting summary.

Mr. Flocken mentioned that he is planning to develop a sector guideline document including possible work instructions and timelines that will be usable by all sectors.

Mr. Rob Upright (Sector Chair) thanked Mr. Minnich for agreeing to fill this position beginning with the 2021 WS meeting.

7. Discussion regarding Load Cell Capacities and v_{min} Values on NTEP Certificates of Conformance

Source:

Cardinal Scale Manufacturing Company

Background:

Mr. Eric Golden (Cardinal Scale Manufacturing Co.) introduced the idea of creating a method to allow the elimination of the table listed on the NTEP Certificate of Conformance (CC) that mentions specific technical specification such as capacity and v_{min} .

Discussion/Conclusion:

Mr. Golden pointed out that a capacity range is mentioned in the For: box of a CC, however; the table in the Standard Features and Options box lists specific capacities. In the event that a manufacturer wants to build a capacity that is within the capacity range in the For: box but not listed in the table, the manufacturer must submit an application to add this single capacity to the table.

Mr. Flocken mentioned that NTEP has no policy specifically stating the need for the table, however; the v_{min} value listed in the table, by device capacity, is needed to permit field officials to confirm the use of the proper load cell or load cell replacement when determining suitability of the load cell using the v_{min} Relationship Formula in NIST Handbook 44, Scales Code, Paragraph S.5.4.

Mr. Golden explained that OIML has a method that allows the v_{\min} value to be calculated using other specifications of the load cells performance. Using this method eliminates the need for the table listing each capacity and its associated v_{\min} value.

Mr. Golden asked for volunteers to work with him to develop a proposal to remove the need for the table. The following individuals agreed to participate:

Mr. Scott Davidson	Mettler-Toledo, LLC
Mr. Darrell Flocken	NCWM
Mr. Andy Goddard	Marel
Mr. Jan Konijnenburg	Rice Lake Weighing Systems, Inc.
Mr. Rob Upright	VPG Transducers

Note: NTEP can support this work group by offering the use of the NCWM Zoom meeting scheduling capabilities.

8. Discussion on Use of Vehicle and Axle-Load Scales in Charging Service Fees

Source:

NIST-OWM

Background:

Mr. Rick Harshman (NIST, OWM) discussed a new proposal submitted to the Regional S&T Committees addressing the use of a vehicle and axle-load scales when charging a service fee.

Discussion/Conclusion:

Mr. Harshman explained that this is a developing item and was interested in any comments or feedback the meeting participants may have on the subject. Several members provided comments. Additional comments, or questions should be directed to Mr. Harshman.

9. Share New S&T Regional Proposal – Modify HB44, Scales Code, S.1.1. Zero Indication

Source:

Mr. Jack Walsh (Town of Wellesley, Massachusetts)

Background:

This item is being presented to the meeting participants as information only.

Discussion/Conclusion:

Mr. Flocken (NTEP Administrator) commented that the proposal recommends a change to requiring the display of a zero load indication when the scale enters into or during the operation of a screen saver or power saver mode. This proposal was submitted to the Region S&T Committee for discussion and possible addition to the NCWM S&T Committee Agenda for the 2021 meeting cycle. The submitter is recommending a voting status for the proposed specification changes. As the item deals with an issue related to scales, it was felt that there was merit with sharing this item to the meeting participants. Comments, or questions regarding this item should be directed to the submitter or presented during the Committees Open hearings.

10. Next Meeting

The Sector agreed to hold its next meeting during the week of August 16, 2021. This would have Monday, August 16, 2021 as a travel day with the meeting days being Tuesday and Wednesday, August 17 and 18, 2021 respectively. The members recommended meeting locations of Annapolis, Maryland; Pittsburgh, Pennsylvania; or Minneapolis, Minnesota.

Mr. Flocken reported that due to a decrease in membership and attendance of the Belt Conveyor Scale Sector (BCSS),

consideration is being give to combining the Belt Conveyor Scale Sector meeting with the Weighing Sector (WS) Meeting. Both Sectors will maintain their individual identity. The combined meeting agenda would be such that the BCSS agenda items would be placed first or last in consideration of their members time. However; BCSS members will be welcome and encouraged to participate in the WS meeting and the WS members will be welcome and encouraged to participate in the BCSS meeting.

11. Meeting Attendees

The following individuals participated in the 2020 Weighing Sector meeting.

Weighing Sector Members:

Mr. Rob Upright	VPG Transducers
Mr. Darrell Flocken	NCWM
Mr. Loren Minnich	Kansas
Mrs. Tina Butcher	NIST, Office of Weights and Measures
Mr. Rick Harshman	NIST, Office of Weights and Measures
Mr. Tom Buck	Ohio
Mr. Kevin Chesnutwood	NIST
Mr. Andy Goddard	Marel
Mr. Robert Meadows	Kansas
Mr. Bill Miller	Mettler-Toledo, LLC
Mr. Eric Morabito	New York
Ms. Cinthia Reyes	California
Mr. Zacharias Tripoulas	Maryland
Mr. Pascal Turgeon	Measurement Canada
Mr. Steven Beitzel	Systems Associates, Inc.
Scott Davidson	Mettler-Toledo, LLC
Mr. Eric Golden	Cardinal Scale Manufacturing Co.
Mr. Scott Henry	Zebra Technologies
Mr. Jan Konijnenburg	Rice Lake Weighing Systems, Inc.
Mr. Louis Straub	Fairbanks Scales, Inc.
Mr. Russ Vires	Mettler-Toledo, LLC
Mr. Jerry Wang	A&D Engineering, Inc.

Other Participants:

Mr. John Barton	NIST, Office of Weights and Measures
Mr. Mike Manheim	NCWM
Mr. Luciano Burtini	Measurement Canada
Mr. John Roach	California
Mr. Sprague Ackley	Digimarc

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Appendix G

National Type Evaluation Program (NTEP) Multiple Dimension Measuring Device (MDMD) Work Group Meeting Summary

May 5, 2021
Virtual Meeting

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Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
NIST	National Institute of Standards and Technology	NTEP	National Type Evaluation Program
MDMD	Multiple Dimension Measuring Device	OIML	International Organization of Legal Metrology
MC	Measurement Canada	OWM	Office of Weights and Measures
MRA	Mutual Recognition Arrangement	R	Recommendation
NCWM	National Conference on Weights and Measures	WG	Work Group

INTRODUCTION AND WELCOME

Mr. Chris Senneff, (Rice Lake Weighing Systems and WG Chair) welcomed everyone to the 2021 Work Group (WG) Meeting. The MDMD Work Group meeting was held in combination with the Software Sector meeting. Introductions were made and the meeting was called to order.629356

1. Reiteration of NTEP MDMD Work Group Mission

Discussion:

This topic was skipped due to the limited amount of time available for this meeting. Mr. Darrell Flocken (NTEP) has indicated the WG needs to be more self-supportive in the future.

2. Sector secretary assignment

Discussion:

The workgroups are required to appoint a secretary in order to be self-supporting. Mr. Jan Konijnenburg (Rice Lake Weighing Systems) has taken over this task after Mr. Senneff and Mr. Konijnenburg had joint ownership during the 2019 meeting.

3. Report – NCWM Interim Meeting

Discussion:

During the 2020 NCWM Interim Meeting in January 2020, Mr. Flocken reported that, the S&T Committee had one item dealing with MDMDs. There was no 2020 workgroup meeting to discuss this item. During the 2021 NCWM Interim Meeting in January 2021, the S&T Committee had no items dealing with MDMDs.

4. Report – Recent Measurement Canada Type Evaluation Activity

Discussion:

Mrs. Paige Vinten has taken over from Pascal as representative for Measurement Canada. It has been a challenging year for Measurement Canada. There were 2 months of complete shutdown of approval work and slow progress on approvals. There have been no changes to the code. There is no target date yet for removing the conditional status. Hopefully in the next few years.

5. Report – Recent NTEP MDMD Type Evaluation Activity

Discussion:

Mr. Tom Buck (Ohio, NTEP Laboratory) reported the following evaluation activity occurred in the previous 12 months.

- 7 assignments were received of which 4 new CCs and 3 amended CCs.
- This included assignments for 3 new companies.

Mr. Darrell Flocken (NTEP) states that more and more apps are submitted for approval instead of systems based on built for purpose hardware. In general, for these kinds of systems the hardware requirements mentioned in the certificate are minimal and often limited to the type and version of the operating system. Their metrological characteristics are mainly protected by an audit trail.

Mr. Ron Peasley: Stated that in the next couple of weeks there will be a OIML D31 meeting and software only based instruments will be a topic that Measurement Canada is very interested in.

Mr. Flocken: For software-based instruments hardware must be mentioned in the NTEP certificate but it will be limited to the very minimal operating requirements such as operating system.

CARRYOVER ITEMS

6. Review meeting summary from May 2019 meeting.

Discussion:

A copy of the May 2019 Meeting Summary can be downloaded at www.ncwm.net/ntep/sectors/mdmd/archive. Please bring a copy of the summary with you to the meeting.

Discussion:

Hearing no comments, a call for approval of the minutes was made and a positive vote was received from all voting members of the WG.

7. Review changes to NIST Handbook 44, MDMD code since last meeting.

Discussion:

During the 2019 NCWM, Annual Meeting in July 2019, no new items were adopted.

During the 2020 NCWM Annual Meeting, which was held virtually in January 2021. The membership adopted the proposal, from the MDMD Work Group, to include the definition of the term “Dimensional Offset”.

Due to the meeting being held in a virtual format, the voting needs to be ratified at the 2021 NCWM Annual Meeting.

8. Review changes to Measurement Canada MDMD Code, and Terms and Conditions Documents.

Discussion:

Discussion, as needed, regarding any changes to the Canadian MDMD Code since the Work Group’s May 2019 meeting. However, no input on changes to Measurement Canada MDMD Code, and Terms and Conditions Documents was available.

9. Review OIML Activity Related to R129 CD2.

Discussion, as needed, regarding activity of the OIML Committee responsible for revising the International Recommendation 129 for MDMD instruments.

Discussion:

Canada and Australia co-chair the workgroup. There was a lot of focus on addition of software requirements. Improvement on description of test procedure and test report format. OIML R 129 has been published and can be freely downloaded from the OIML website.

Mr. Richard Harshman (NIST OWM) has retired from NIST.

10. Review changes to 2019 edition of NCWM, Publication 14, MDMD Checklist.

Discussion:

The following change(s), as agreed to during the May 2019 MDMD Work Group meeting, and approved by the NTEP Committee was made to the MDMD Checklist in the 2020 edition of Publication 14:

Section	Amendment	Pages
12	Added Device Tolerances and Code References paragraphs, renumbered all remaining paragraphs.	MDMD-16
Document	Please note that the Weighing Devices publication has been thoroughly reviewed by NCWM staff. Changes have been made, but none are to change intent of the policies, checklists or test procedures, thus considered editorial. Issues or concerns should be brought to the attention of NCWM staff.	Document

Since there was no 2020 MDMD meeting no changes have been made to the MDMD Checklist in the 2021 edition of Publication 14.

There was no further discussion about the amendments above.

11. In-motion Forklift based Pallet Dimensioning.

In the recent years, several NTEP Certificates of Conformance have been issued to devices designed to measure palletized freight while being transported (in-motion) on a forklift truck. The Ohio Lab, in conjunction with the device manufacturer, has created a series of tests used during the evaluation.

At the 2019 MDMD Meeting, the subgroup agreed that for now the test procedure as developed by the Ohio test lab should be used. An update on the progress of the sub-workgroup will be provided by Mr. Budinger.

Discussion:

There has been no progress on this topic. Goal is to make the proposal ready for addition in Pub 14 (in the correct format). Mr. Mike Kelley will reach out to Bruce Budinger to get the group back together and move forward with this topic. The task group will produce a proposal which will be open to the entire group to comment on.

12. Misc. Items for General discussion.

Discussion, as needed, regarding any miscellaneous items for general discussion.

Discussion:

At the NCWM 2021 Annual Meeting, no items were brought forward to be discussed.

NEW ITEMS

13. Listing Metric Equivalent “d” Values When Testing in Imperial Units (e.g., inches).

It was recently brought to NTEP’s attention that Certificates of Conformance (CC) for Multiple Dimension Measuring Devices have listed the incorrect metric equivalent when the evaluation was performed using test objects calibrated in imperial units.

Example 1: CCs can be found that state in the Test Conditions that the evaluation was performed with a ‘d’ value of 0.2 inches and the For: box, it is indicated that $d = 0.2 \text{ inch}/5 \text{ mm}$. This is an incorrect equivalent as 0.2 inch converts to 5.08 mm and NTEP Policy does not support the rounding down to a smaller value for “d”.

Example 2: CCs can be found that state in the Test Conditions that the evaluation was performed with a ‘d’ value of 0.1 inches and the “For:” box, it is indicated that $d = 0.1 \text{ inch}/2 \text{ mm}$. This is an incorrect equivalent as 0.1 inch converts to 2.54 mm, and NTEP Policy does not support the rounding down to a smaller value for “d”.

Following NTEP Policy, supported by specifications in Handbook 44, the proper rounding, in this situation should be:

- 0.1 inch = 5 mm (Note, even a 2.5 mm value, which is permitted, cannot be used if proper rounding is applied.)
- 0.2 inch = 10 mm

Notes:

1. Devices evaluated by Measurement Canada, in conjunction, with an NTEP Evaluator, do not have this issue as the evaluation was performed using test objects calibrated in metric units.
2. Also, this issue would not apply to any device where the initial evaluation was done in imperial units and a subsequent evaluation, where the same “d” values in metric units were used.

With the help of Mr. Mike Kelly (Ohio, NTEP Laboratory), all active CCs were reviewed, and the findings show that all active CCs, listing both imperial and metric units, where “d” was 0.1 or 0.2 inches have the incorrect metric equivalent values listed. This indicates that the error was made on the 1st CC issued and has been replicated on each one since.

The discussion is, how does NTEP go forward with this issue? Points to consider:

1. What impact would it have if NTEP amends all CCs, with this issue, to list the proper metric equivalent values? (This would mean that potentially a device currently certified with a 2 mm “d” value could now have a 5 mm “d” value and a device currently certified with a 5 mm “d” value could now have a 10 mm “d” value.)
2. What impact would it have if all new CCs would list the proper metric equivalent values and all current CCs would remain unchanged?
3. What impact would it have if all new and amended CCs would list, or be changed to, the proper metric equivalent values?
4. What impact would it have if all current CCs were amended to correct the metric equivalent values and all new CCs follow the correct metric equivalent.
5. Is it an acceptable option to continue this practice?

Regardless of which direction we go in, one thing to consider would be for NTEP to evaluate all MDMD's, wanting both imperial and metric listed on the CC, to use test objects calibrated in metric units as the metric to imperial conversion of the 2 mm and 5 mm values to inches works.

- 2 mm = 0.07874 inches, rounded to 0.1 inches
- 5 mm = 0.19685 inches, rounded to 0.2 inches

Discussion:

Mr. Scott Davidson states that option 2 should be out of the question.

Mrs. Paige Vinten suggests doing additional testing on the model but keep it to a minimum.

Mr. Don Newell stresses that the measurements must be correct. Users are basically unaffected. Manufacturers have to deal with this. The impact on user should be minimal.

Mr. Jeff Cooper agrees with Don. If there are rounding errors, then it should be in favor of the consumer.

Mr. Tony Romeo: Option 2 is not realistic. He agrees with Mrs. Vinten that testing is necessary but restrict the time frame. He proposes to share test data as an exception on the MRA. Mrs. Vinten states that sharing the test data is possible.

Mr. Tom Buck: Ohio is scheduling to purchase a metric set of objects.

Mr. Davidson: Testing at Measurement Canada would work for Mettler-Toledo but may not work in all cases.

Mr. Romero states that in Canada, not the entire test needs to be done metric. An additional test is done to prove that the instrument can handle the smaller d.

Mr. Darrell Flocken states that changing the certificate is the least favorable option. Canadian test results can be accepted. He will come back to the group with a proposal.

Mr. Jan Konijnenburg states that if the tests have been done in a higher resolution, then existing test results may be re-evaluated to the smaller d.

Mr. Patrick Tilley favors all testing in metric and add an imperial test for rounding and other unit specific characteristics.

Conclusion:

NTEP will review all active MDMD Certificates of Conformance to see how many may require additional testing and also develop a recommendation on how the testing can be accomplished with the least impact to the certificate holder. This information will be reported to the WG members for agreement before any actions are taken.

14. Object size during influence factor test.

In Publication 14 the test procedure for the temperature test prescribes that the test shall be conducted with three or more test objects with dimensions within the range of each axis listed on the device. This leaves a lot of room for interpretation. It would be better for all parties to have a better definition of the object sizes taking into account the height of the sensor in the temp chamber vs normal installation and operation.

Discussion:

Mr. Jeff Gibson states that the Ohio lab tests whatever object they can test. If the object doesn't fit, then they won't use that test object.

Mr. Mike Eichenburg is not sure what good language would be. The focus should be the temperature behavior of the electronics and not so much the accuracy throughout the range.

Mrs. Paige Vinten and Mr. Ron Peasley state that in Canada three objects are taken within the range of the sample being tested (full or reduced).

Mr. Scott Davidson states that a percentage would be an acceptable solution.

Mr. Darrell Flocken states that the code requires three objects within the range. It doesn't state anything about testing at max, min, etc.

Conclusion:

No action will be taken on this item at this time.

15. Addition definition Dimensional Offset to publication 14.

In Publication 14 the test procedure for the temperature test prescribes that the test shall be conducted with three or more test objects with dimensions within the range of each axis listed on the device.

Problem/justification:

During the 2020 NCWM Annual Meeting, which was held virtually in January 2021. The membership adopted the proposal, from the MDMD Work Group, to include the definition of the term "Dimensional Offset".

Due to the meeting being held in a virtual format, the voting needs to be ratified at the 2021 NCWM Annual Meeting.

This WG item defines the change needed to the Publication 14, Technical Policy to align with the change that will be presented in the 2022 edition of Handbook 44.

I am asking the WG to review and ultimately agreed to the proposed change presented below for inclusion into the 2022 edition of Publication Checklist. (Note, if for some reason the items voting does not get ratified, the proposal will be held over for the 2022 Work Group Meeting.)

Proposal:

Add the new definition to the MDMD Technical Policy, Section D. Terms and Definitions used in this Checklist, Page MDMD-2 of the 2021 edition of Publication 14, Weighing Devices.

D. Terms and Definitions used in this Checklist

The following terms and definitions are used in the Checklist and Test Procedures Sections. The definitions are provided to assist in understanding the terms use related to the test procedures for Multiple Dimensioning Measuring Devices.

- Longitudinal – The orientation in which the longest axis of the test object is aligned in the horizontal plane and parallel to the direction of travel for dynamic devices, or front to back for static devices.
- Transverse – The orientation in which the longest axis of the test object is aligned in the horizontal plane and perpendicular to the direction of travel for dynamic devices, or side to side for static devices.
- Vertical – The orientation in which the longest axis of the test object is aligned perpendicular to the horizontal plane.
- **Dimensional Offset – The effect of eliminating the conveyance material on a measurement made by a multiple dimension measuring device resulting in only the object intended to be measured being measured.**

Discussion:

Mr. Jim Pettinato suggested a somewhat modified language, but Mr. Darrell Flocken stated that the language is voted on and cannot be changed.

Conclusion:

All members agreed with the proposed addition as stated above. Assuming the passing vote is ratified during the NCWM 2021 Annual Meeting, the addition will be made in the 2022 edition of Publication 14.

16. Change the term Tare to Dimensional Offset at multiple places in publication 14

In Publication 14 the test procedure for the temperature test prescribes that the test shall be conducted with three or more test objects with dimensions within the range of each axis listed on the device.

Problem/justification:

During the 2020 NCWM Annual Meeting, which was held virtually in January 2021, the membership adopted the proposal from the MDMD Work Group, replace the use of the word “Tare” with the term “Dimensional Offset”. Due to the meeting being held in a virtual format, the voting needs to be ratified at the 2021 NCWM Annual Meeting.

This WG item defines the changes needed to the Publication 14 Checklist to align with the changes that will be presented in the 2022 edition of NIST Handbook 44.

I am asking the WG to review and ultimately agreed to the proposed changes presented below for inclusion into the 2022 edition of Publication Checklist. (Note, if for some reason the items voting does not get ratified, the proposal will be held over for the 2022 Work Group Meeting.)

Proposal:

Recommendation 1:

Page MDMD-8, Table 1.

<p>Table 1. Multiple Dimensions Measuring Device (MDMD) Features and Parameters</p>	
<p>Typical MDMD Features to Be Sealed</p>	<p>Typical MDMD Features and Parameters NOT Required to Be Sealed</p>
<ul style="list-style-type: none"> • Zero • Initial Zero-Setting Mechanism (IZSM) • Span (minimum and maximum) • Minimum and Maximum Speed (dynamic systems) • Linearity Correction Values • Calibration Coefficient • Motion Detection (on/off) (static systems) • Motion Detection (update rate) (static systems) 	<ul style="list-style-type: none"> • Display Update Rate • Stored Tare Dimensional Offset Capability (per axis) • Selection of Tare Dimensional Offset Feature Operation (per axis) • Product Codes • Rate Charges • Discounts • Electronic Data Transfer Parameters (e.g., check sums baud rates, protocol, etc.)

<p>Table 1. Multiple Dimensions Measuring Device (MDMD) Features and Parameters</p>	
<p>Typical MDMD Features to Be Sealed</p>	<p>Typical MDMD Features and Parameters NOT Required to Be Sealed</p>
<ul style="list-style-type: none"> • Number of Samples Averaged for Dimension Readings • Averaging Time • Selection of Measurement Units (if internally switched and not automatically displayed on the indicator) • Division Value, d • Minimum and Maximum Dimensions (per axis) • Range of Over Capacity Indications (if it can be set to extend beyond regulatory limits) 	

Recommendation 2.

Page MDMD-10, Code Reference S.1.3.

Code Reference: S.1.3.

Except when in the ~~tare~~ **dimensional offset** mode, negative values are not indicated or recorded.

☐ Yes ☐ No ☐ N/A

Recommendation 3.

Page MDMD-12, Section 5. Tare

5. Dimensional Offset

5.1. The ~~tare~~ **dimensional offset** mechanism shall operate only in a backward direction (under-registration).

☐ Yes ☐ No ☐ N/A

5.2. On a device designed to automatically clear any ~~tare~~ **dimensional offset** value entered, means shall be provided to prevent the clearing of ~~tare~~ **dimensional offset** until a complete transaction has been indicated.

☐ Yes ☐ No ☐ N/A

Recommendation 4.

Page MDMD-12, Section 6. Tare Operation – Facilitation of Fraud

6. ~~Tare~~ **Dimensional Offset** Operation – Facilitation of Fraud

Recommendation 5.

Page MDMD-12, Code References: G-S.5.6., G-S.5.1. and G-S.5.2.5.

All recorded values must be permanent, legible, and printed in a digital format. Although *NIST Handbook 44* does not require the printing of gross, ~~tare~~ **dimensional offset**, and net values, some States may require the printing of all three values.

Recommendation 6.

Page MDMD-13, Code Reference: S.1.8.

7.8. Except for entries of ~~tare~~ **dimensional offset**, when objects are smaller than the minimum dimensions or larger than any of the maximum dimensions plus 9 d, and/or maximum volume marked on the device plus 9 d,

or when a combination of dimensions for the object being measured exceeds the measurement capability of the device, the indicating or recording element shall either:

Recommendation 7.

Page MDMD-14, Section 8. Design of Zero and Tare.

8. Design of Zero and Tare Dimensional Offset

Code Reference: S.2.

- 8.1. The device shall be equipped with a means by which the zero reference or ready condition can be adjusted, or the zero reference or ready condition shall be automatically maintained. ☐ Yes ☐ No ☐ N/A

Note: Belt stopped is NOT a non-ready condition

- 8.2. The zero reference or ready control circuits shall be interlocked so that their use is prohibited during measurement operations. ☐ Yes ☐ No ☐ N/A

- 8.3. The ~~tare~~ **dimensional offset** function shall operate only in a backward direction (under-registration) with respect to the zero reference or ready condition of the device. ☐ Yes ☐ No ☐ N/A

- 8.4. The value of the ~~tare~~ **dimensional offset** division or increment shall be equal to the division of its respective axis on the device. ☐ Yes ☐ No ☐ N/A

- 8.5. There shall be a clear indication that ~~tare~~ **dimensional offset** has been taken. ☐ Yes ☐ No ☐ N/A

- 8.6. Maximum Value of ~~Tare~~ **Dimensional Offset** for Multi-Interval (Variable Division-Value) Devices. – A multi-interval device shall not accept any ~~tare~~ **dimensional offset** value greater than the maximum capacity of the lowest range of the axis for which the ~~tare~~ **dimensional offset** is being entered. ☐ Yes ☐ No ☐ N/A

- 8.7. Net Values, Mathematical Agreement. - All net values resulting from a device subtracting a ~~tare~~ **dimensional offset** entry from a gross value indication shall be indicated and recorded, if so equipped, to the nearest division of the measuring range in which the net value occurs. In instances where the ~~tare~~ **dimensional offset** value entered on a multi-interval device is in a lower partial measuring range (or segment) than the gross indication, the system shall either alter the ~~tare~~ **dimensional offset** entered or round the net result after subtraction of the ~~tare~~ **dimensional offset** in order to achieve correct mathematical agreement.

Consider a multi-interval device having two partial measuring ranges for the “x” axis:

- Partial measuring range 1: 0 – 100 inches by 0.2 inch
- Partial measuring range 2: 100 – 300 inches by 0.5 inch

The following examples clarify the two acceptable methods this device can use to achieve mathematical agreement when ~~tare~~ **dimensional offset** has been entered in a lower partial measuring range than the gross indication:

Acceptable Example 1. Altering of a Tare Dimensional Offset Entry to Achieve Accurate Net Indication			
Gross Indication of Item Being Measured	Tare Dimensional Offset Entered	Value of Tare Dimensional Offset after Being Altered by the Device	Acceptable Net Indication
154.5 inches	41.2 inches	41.0 inches	113.5 inches
154.5 inches	41.4 inches	41.5 inches	113.0 inches

Acceptable Example 2. Rounding of the Net Result (Following the Subtraction of Tare Dimensional Offset) to Achieve Accurate Net Indication			
Gross Indication of Item Being Measured	Tare Dimensional Offset Entered	Net Result Before Rounding (Gross Indication Minus Tare Dimensional Offset Entered)	Acceptable Net Indication Rounded to Nearest 0.5 inch
154.5 inches	41.2 inches	113.3 inches	113.5 inches
154.5 inches	41.4 inches	113.1 inches	113.0 inches

Recommendation 8:

Page MDMD-26, Code Reference S.1.18.

Except for entries of ~~tare~~ **dimensional offset**, when objects are smaller than the minimum dimensions identified in paragraph S.1.7. or larger than any of the maximum dimensions plus 9 d and/or volume marked on the device plus 9 d, or when a combination of dimensions for the object being measured exceeds the measurement capability of the device, the indicating or recording element shall either:

Discussion:

At the NCWM 2021 Annual Meeting, there was no discussion.

Conclusion:

All members agreed with the proposed additions as stated above. Assuming the passing vote is ratified during the NCWM 2021 Annual Meeting, the addition will be made in the 2022 edition of Publication 14

Recommendation

8.

Page MDMD-26, Code Reference S.1.18.

Except for entries of tare dimensional offset, when objects are smaller than the minimum dimensions identified in paragraph S.1.7. or larger than any of the maximum dimensions plus 9 d and/or volume marked on the device plus 9 d, or when a combination of dimensions for the object being measured exceeds the measurement capability of the device, the indicating or recording element shall either:

17. Correction section 27 of publication 14

Problem/justification:

Incorrect 'step' reference in the 2021 edition of Publication 14, Weighing, Multiple Dimension Measuring Device Checklist, page MDMD-28, Section 27. Influence Factors.

Proposal:

Test Procedures: line 7. Currently reads “Repeat 10.4 to 10.5 three times.” It should read “Repeat steps 4 to 5 three times.”

Discussion:

At the NCWM 2021 Annual Meeting, there was no discussion.

Conclusion:

All members agreed with the proposed correction as stated above. This change will be made in the 2022 edition of Publication 14.

18. Modification sentence 2.10 of publication 14

Problem/justification:

Sentence 2.10. on page MDMD-10 of Publication 14 asks the question if the system is designed to attach a printer for the purpose of printing the contents of the audit trail.

“2.10. The system is designed to attach a printer which can print the contents of the audit trail.”

This question is not consistent with the requirements stated in the MDMD Code in Handbook 44, page 5.86, Table S.1.11. Category 3, Methods of Sealing, which states:

“A printed copy of the information must be available through the device or through another on-site device.”

This requirement implies that additional means other than an attached printer can be used to provide the printed copy of the audit trail contents.

Proposal:

Revise the wording of 2.10. similar to the wording of the first sentence used in the Digital Electronic Scales Checklist, Appendix B, *Event Loggers: Acceptable Form of Audit Trail for Category 3 Devices*, page DES-152 which reads:

4. A hard-copy printout of the contents of the event logger shall be available upon demand from the device or an associated device on the site of the device installation.

I propose the following wording to replace the current wording of 2.10.

2.10. The system is designed to provide a printed copy of the audit trail contents either through the device or through another on-site device.

Discussion:

At the NCWM 2021 Annual Meeting, there was no discussion. The workgroup voted on this proposal. There were no objections. The proposal was accepted by the workgroup.

Conclusion:

All members agreed with the proposed addition as stated above. Assuming the passing vote is ratified during the NCWM 2021 Annual Meeting, the addition will be made in the 2022 edition of Publication 14.

19. Change the maximum value indication for a MDMD from max + 9 d to max + 2 d

The following proposal has been submitted for discussion only to get the opinion and/or support of the workgroup.

Proposal:

S.1.8. Indications Below Minimum and Above Maximum.

When objects are smaller than the minimum dimensions identified in paragraph S.1.7. Minimum Measurement or larger than any of the maximum dimensions plus ~~9-d~~ 2 d, and/or maximum volume marked on the device plus ~~9-d~~ 2 d, or when a combination of dimensions, including tare, for the object being measured exceeds the measurement capability of the device, the indicating or recording element shall either:

- (a) not indicate or record any usable values; or
- (b) identify the indicated or recorded representation with an error indication.
- (c) **MDMD's shall not be used to dimension objects larger than the maximum measurement marked on the device.**

(Amended 2004, 2017 and 20XX)

Problem/justification:

No reason to allow anything beyond the marked maximum value in LFT applications. 2 d will cover the tolerance + 1. This seems to be a carryover from the scales code computing scale requirement, and it isn't necessary for a MDMD. Footnote c may be better suited as a User Requirement but wanted to add it here for discussion purposes.

Discussion:

Mr. Jan Konijnenburg and Measurement Canada prefer to stay in line with OIML.

Mr. Ron Peasley said this was discussed during the revision of R 129 and it was decided to keep it as it was.

Mr. Tom Buck and Mr. Jeff Gibson state that it is unknown if the extra range is actually used in practice for transactions.

Mr. Darrell Flocken states that if the WG agrees with the proposal, then a Form 15 has to be submitted to change HB44 first.

Mr. Dick Suiter said that option C is already covered by the general code.

Mr. Flocken states that for LFT applications, you cannot use measurements over max+9d for transactions. Mr. Suiter says that according to general code GR.3.1. the instrument should not be used over Max.

Mr. Flocken states that point C is already in the user requirements.

Conclusion:

The general feeling of the workgroup is to leave the 9d but keep C as user requirement. Since it is already a user requirement, no further action is required.

CLOSING DISCUSSION

20. Review meeting activities and conclusions.

- The in-motion subgroup will develop a proposal for examination of in-motion measuring systems.
- On item 8 (testing in metric units vs imperial units), Mr. Darrell Flocken will develop a proposal to solve the issue.

21. Next meeting

The work group is encouraged to recommend a date and location for the next work group meeting. The recommendation will be presented to the NTEP Committee for review and approval. The WG should maintain, at a minimum, a yearly meeting schedule.

Discussion:

The members agreed that the 2022 meeting will be on Wednesday, May 4th, from 9 a.m. to 5:00 p.m. and Thursday, May 5th from 9:00 a.m. to 12:00 p.m. The meeting will be held at the Ohio Department of Agriculture, Administration Building.

2020 Final Report of the Nominating Committee

Mr. Stephen Benjamin, Committee Chair
North Carolina

INTRODUCTION

The Nominating Committee (hereinafter referred to as the “Committee”) submits its Interim Report for consideration by National Conference on Weights and Measures (NCWM). This report contains the slate of nominees as officers of the corporation.

Table A identifies the agenda items by reference key, title of item, page number and the appendices by appendix designations.

Table A Table of Contents		
Reference Key	Title of Item	NOM Page
NOM - NOMINATIONS.....		2
NOM-1	Officer Nominations	2

This publication is available free of charge from: <https://doi.org/10.6028/NIST.SP.1281>

Details of All Items
(In order by Reference Key)

NOM - NOMINATIONS

NOM-1 Officer Nominations

NOTE: NCWM opened the 105th Annual Meeting on July 15, 2020. The meeting adjourned to January 10, 2021 due to lack of quorum caused by the COVID-19 pandemic. The Board of Directors followed provisions in the NCWM Bylaws for filling vacancies on the Board to install the nominations below into office.

Source:

Nominating Committee

Purpose:

Election of NCWM Officers.

Item Under Consideration:

The following slate of officers was selected by unanimous vote of the Committee:

Chairman-Elect:

Mr. Ivan Hankins, Iowa Department of Agriculture

Treasurer: (3 years)

Mr. Raymond Johnson, New Mexico Department of Agriculture

Board of Directors Active Director – Central: (5 years)

Mr. Loren Minnich, Kansas Department of Agriculture

Background/Discussion:

The Nominating Committee met in advance of the 2020 Interim Meeting at the Mission Inn and Spa in Riverside, California, at which time the Committee nominated the persons listed above to be officers of the 106th National Conference on Weights and Measures. In the selection of nominees from the active and associate membership, consideration was given to professional experience, qualifications of individuals, conference attendance and participation, and other factors considered to be important.

Mr. Stephen Benjamin, North Carolina | Committee Chair

Mr. James Cassidy, Massachusetts | Member

Mr. Ivan Hankins, Iowa | Member

Mr. Ron Hayes, Missouri | Member

Mr. Hal Prince, Florida | Member

2020 Nominating Committee

2021 Final Report of the Nominating Committee

Mr. Craig VanBuren, Committee Chair
Michigan

INTRODUCTION

The Nominating Committee (hereinafter referred to as the “Committee”) submitted its Interim Meeting Report for consideration by National Conference on Weights and Measures (NCWM). This report contains the slate of nominees as officers of the corporation.

Table A identifies the agenda items by reference key, title of item, page number and the appendices by appendix designations.

Table A Table of Contents		
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Details of All Items
(In order by Reference Key)

NOM - NOMINATIONS

NOM-21-1 V Officer Nominations

(These nominees were elected by unanimous vote)

Source:

Nominating Committee

Purpose:

Election of NCWM officers.

Item Under Consideration:

The following slate of officers was selected by unanimous vote of the committee:

Chairman-Elect:

Mr. Mahesh Albuquerque, State of Colorado

Board of Directors Active Membership Western (Fulfill remainder of Mr. Albuquerque's term)

Ms. Cadence Matijevich, State of Nevada

Board of Directors At-Large Director (5 years)

Mr. Marc Paquette, State of Vermont

Background/Discussion:

The Nominating Committee met via Zoom prior to the 2021 Interim Meeting at the Sirata Hotel and Conference Center in St. Pete, Florida, at which time the Committee nominated the persons listed above to be officers of the 107th National Conference on Weights and Measures. In the selection of nominees from the active and associate membership, consideration was given to professional experience, qualifications of individuals, conference attendance and participation, and other factors considered to be important.

Mr. Craig VanBuren, Michigan | Committee Chair

Mr. Stephen Benjamin, North Carolina | Member

Mr. James Cassidy, Massachusetts | Member

Mr. Ivan Hankins, Iowa | Member

Mr. Mahesh Albuquerque, Colorado | Member

Mr. Gene Robertson, Mississippi | Member

Mr. Marc Paquette, Vermont | Member

2021 Nominating Committee

**Combined 105th Annual Meeting and
2021 Interim Meeting FINAL Attendee List
January 10-15, 2021 / ONLINE**



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