Appendix E

National Type Evaluation Technical Committee (NTETC) Weighing Sector Meeting Summary

August 30 - September 1, 2011
Sacramento, California

INTRODUCTION

The charge of the NTETC Weighing Sector (herein after referred to as "Sector") is to provide appropriate type evaluation criteria based on specifications, tolerances, and technical requirements of NIST Handbook 44, *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*, Sections 1.10. General Code, 2.20. Scales, 2.22. Automatic Bulk Weighing Systems, and 2.24. Automatic Weighing 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 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***.

Note: It is policy to use metric units of measurement in 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 inch-pound units.

Table A
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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	NEWMA	Northeastern Weights and Measures Association
AWS	Automatic Weighing Systems	NTEP	National Type Evaluation Program
CC	Certificate of Conformance	NTETC	National Type Evaluation Technical Committee
DES	Digital Electronic Scales	OIML	International Organization of Legal Metrology
IZSM	Initial Zero-Setting Mechanism	OWM	Office of Weights and Measures
LMD	Liquid Measuring Device	R	Recommendation
MC	Measurement Canada	S&T	Specifications and Tolerances Committee
MRA	Mutual Recognition Agreement	SMA	Scale Manufacturers Association

Details of All Items
(In order by Reference Key)

CARRY-OVER ITEMS

1. Recommended Changes to NCWM Publication 14

Source:
Mr. Harshman, NIST Technical Advisor, has provided the Sector with specific recommendations for incorporating test procedures and checklist language based upon actions of the 2011 NCWM Annual Meeting. The Sector is asked to briefly discuss each item and, if appropriate, provide general input on the technical aspects of the issues.

1.a. Item 310-1: NIST Handbook 44 G-S.8. Provisions for Sealing Adjustable Components

Source:
2010 NTETC Weighing Sector

Background/Discussion:
At the 2010 NTETC Weighing Sector Meeting, the Sector:

1. reviewed the sealing procedures in NCWM Publication 14 Scales type evaluation checklist and procedures;

2. compared them with similar type evaluation criteria in NCWM Publication 14 for Liquid Measuring Device (LMD); and

3. reviewed applicable NIST Handbook 44 sealing requirements in the General, Scales, and LMD codes.

Prior to the 2010 NTETC Weighing Sector Meeting, a small work group was formed to develop more detailed procedures for determining compliance of the methods for sealing and requested the Sector consider its recommendations for NCWM Publication 14, Digital Electronic Scales (DES) Section 10. The Sector reviewed the recommendations and agreed with the revised proposal to amend NCWM Publication 14 Scale Section 10 and recommended it be forwarded to the S&T Committee and the Scale Manufacturers Association (SMA) for consideration prior to the 2011 NCWM Interim Meeting. The Sector also agreed to forward the amended language for NCWM Publication 14 to the S&T Committee with a recommendation that the S&T item be Withdrawn from the Committee's agenda.

At the 2011 NCWM Annual Meeting, the Committee agreed to add the following two paragraphs into the Report of the 96th NCWM to make clear its interpretation of G-S.8.:

- The current language in paragraph G-S.8. states: "A device shall be designed with provision(s) for applying a security seal that must be broken, or for using other approved means of providing security (e.g., data change audit trail available at the time of inspection), before any change that detrimentally affects the metrological integrity of the device can be made to any electronic mechanism."

- Thus, for parameters protected by physical means of security, once a physical security seal is applied to the device, it should not be possible to make a metrological change to those parameters without breaking that seal. Likewise, for parameters protected by electronic means of security, it should not be possible to make a metrological change to those parameters without that change being reflected in the audit trail. Since this philosophy addresses provisions for protecting access to any metrological adjustment, the philosophy should be applied consistently to all electronic device types.

During the 2011 Northeastern Weights and Measures Association (NEWMA) Annual Meeting, Mr. Andersen, retired member, stated that he believed that the language that was added to NCWM Publication 14 is different than

what was proposed for vote. The language added to NCWM Publication 14 allows a device with physical means of sealing to be sealed in the calibration or configuration mode if it provides a clear indication that it's in that mode. If it was the intent of NTEP to accept an indicator light to depict when a device is in the calibration or configuration mode, he recommended that the S&T Committee sanction that in their interpretation. Since NTEP policy must conform with NIST Handbook 44, it seems necessary to ensure the code also permits the indicator light. Thus, that must be included in the interpretation of the committee.

As a result of Mr. Andersen's comments, the 2011 S&T Committee asked that the Sector review its most current interpretation of NIST Handbook 44, G-S.8., which was approved by NCWM for inclusion into the Report of the 96th NCWM at its July 2011 Annual Meeting, and verify that the Sector's 2010 recommended changes to NCWM Publication 14 are consistent with the Committee's interpretation.

Conclusion:
Mr. Harshman, NIST Technical Advisor, provided an update to the Sector on the discussions that took place relative to this item during the 2011 NEWMA Annual Meeting and the 2011 NCWM Annual Meeting. The Sector was then asked to review the language that was added to NCWM Publication 14 DES type evaluation checklists and test procedures to confirm that existing language is aligned with the Committee's interpretation of G-S.8. The Sector compared the language that was added to the 2011 S&T Committee Final Report to that which had been added to NCWM Publication 14 and concluded there were no conflicts, and that the language added to NCWM Publication 14 didn't need amending. The Sector agreed to recommend the following changes to NCWM Publication 14, DES Section 10 including the table and Automatic Weighing Systems (AWS).

> **The current language in NIST Handbook 44 paragraph G-S.8. states: "A device shall be designed with provision(s) for applying a security seal that must be broken, or for using other approved means of providing security (e.g., data change audit trail available at the time of inspection), before any change that detrimentally affects the metrological integrity of the device can be made to any electronic mechanism."**
>
> **Thus, for parameters protected by physical means of security, once a physical security seal is applied to the device, it should not be possible to make a metrological change to those parameters without breaking that seal. Likewise, for parameters protected by electronic means of security, it should not be possible to make a metrological change to those parameters without that change being reflected in the audit trail. Since this philosophy addresses provisions for protecting access to any metrological adjustment, the philosophy should be applied consistently to all electronic device types.**

NCWM Publication 14: DES Section 10. Table

> **Indications Representing That the Device is Configured with the Setup or Configuration Mode Enabled (e.g., any mode permitting access to any or all sealable parameters).**
>
> **This list is not limiting or all inclusive and other indications may be acceptable.**

Acceptable Clear Indications	Indications NOT Acceptably Clear
• Unusable Weight Indications (e.g. C100.05E)	• C 100.05 lb
• "Not NIST Handbook 44" Annunciator	• Any Digit in the Weight Differentiated by Size, Shape or Color
• "CAL" Annunciator (single or mixed case)	• Weights Without Units (e.g., 100.05)
• "Set-up" Annunciator (single or mixed case)	• Flashing Weight Value
• "Config" Annunciator (single or mixed case)	• Weight With No Annunciators Displayed
	• Weight All Annunciators Displayed

1.b. Item 320-1: NIST Handbook 44 Scales Code - T.N.4.5.1. Creep and Creep Recovery Requirements for Class III Scales with n > 4000 divisions.

Source:
2010 NTETC Weighing Sector, 2011 Interim Report of the S&T Committee: **ncwm.net/content/annual-archive**

Background/Discussion:
At the 2011 NCWM Interim Meeting, the Conference considered a proposal from the NTETC Weighing Sector to reduce the inconsistency between full load time dependence (creep) requirements in T.N.4.5.1. and return to zero requirements in T.N.4.3. Zero Load Return: Non-automatic Weighing Instruments (creep recovery).

During the 2011 NCWM Interim meeting Open Hearings, Mr. Flocken, Mettler-Toledo, Inc., speaking on behalf of the SMA supported this item. However, later, during the S&T Committee deliberations, Mr. Flocken stated that after researching the item, including a discussion he had with another scale manufacturer, it was concluded that the proposal is not needed since the ultimate determination of compliance is the four-hour test (specified in subparagraph (b) of T.N.4.5.1.) regardless of the current 0.5 e or proposed 0.83 e determinations in the referenced paragraph. The S&T Committee withdrew this item based on this new information provided at the Interim Meeting.

Conclusion:
The Sector took no action, nor discussed this item, after being advised by Mr. Harshman, NIST Technical Advisor, that the item had previously been Withdrawn by the S&T Committee.

1.c. Item 320-2: NIST Handbook 44 Scales Code – T.N.4.7. Amend Creep Recovery Tolerances for Class III L Load Cells

Source:
2010 NTETC Weighing Sector

Background / Discussion:
See the Final Report of the 2011 NCWM S&T Committee Agenda Item 320-2 for the adopted language and additional background information on the item to amend NIST Handbook 44, 2.20. Scales Code paragraph T.N.4.7. Creep Recovery Tolerances for Class III L Load Cells.

Conclusion:
Mr. Harshman, NIST Technical Advisor, provided the Sector with suggested recommendations for amending test procedures in NCWM Publication 14 based upon actions of the 2011 NCWM Annual Meeting. The Sector reviewed the amended test procedures and agreed to recommend the amended procedures:

NCWM Publication 14: Load Cells Section L. II.

L. Procedures

II. Determination of Creep and Creep Recovery, Test Procedure and Permissible Variations

9. Permissible Variations of Reading for Creep Recovery

a. The difference between the initial reading of the minimum load of the measuring range (D_{min}) and the reading after returning to minimum load subsequent to the maximum load (D_{max}) having been applied for 30 minutes shall not exceed:

1. 0.5 times the value of the load cell verification interval (0.5 v) for Class I, II, and IIII load cells.

2. 0.5 times the value of the load cell verification interval (0.5 v) for Class III load cells with 4000 or fewer divisions.

3. 0.83 times the value of the load cell verification interval (0.83 v) for Class III load cells with more than 4000 divisions.

4. ~~1~~2.5 times the value of the load cell verification interval (~~1~~2.5 v) for Class III L load cells.

2. DES Section 42. Zero-Load and Tare Adjustment – Monorail Scales Rounding of Intermediate Values in an Equation

Source:
Mr. Cook, NIST, Office of Weights and Measures (OWM)

Background/Discussion:
NCWM Publication 14 DES Section 42 Zero-Load and Tare Adjustment - Monorail Scales currently reflects language in NIST Handbook 44 regarding the setting of zero and tare value less than 5 % of the scale capacity to within 0.02 % of scale capacity according to NIST Handbook 44, 2.20. Scales Code paragraphs S.2.1.4 (Monorail Scales) and S.2.3.1. (Monorail Scales Equipped with Digital Indications). In other words, a 1000 lb × 1 lb monorail scale shall have the capability to set tare values up to 50 lb to within a resolution of 0.2 lb (1000 × 0.02 %).

However, there are no procedures in Section 42 to verify that a correct zero-load balance or semiautomatic, keyboard entered, or stored tares are not rounded to the nearest value of d (1 lb) before the net weight is calculated. In the above example, a tare that is rounded before the net weight calculation introduces an extra 0.5 lb uncertainty in the net weight. This can be a problem if an average tare value of 7.6 lb for a series of trolleys is entered as tare. Objects (animal carcasses) will be consistently short weighed if the tare is rounded from 7.6 lb to 8 lb before the net weight is calculated. This may present economic harm to sellers or producers of livestock that are paid based on the weights from the monorail scale. Conversely, average tare weights that are rounded down to the nearest displayed scale division may present economic harm to the buyers, typically processors, that pay the producers based on the weights from the monorail scale.

Another question, is whether the net weights are determined using the digital indicator's internal or displayed resolution of the gross weight in the calculation of the net weight?

The following is additional background information supporting the correct rounding (and significant digits) of values in an equation:

NIST SP 811, *Guide for the Use of the International System of Units (SI)*, Mr. Barry N. Taylor and Mr. Ambler Thompson (2008)

B.7.2 Rounding Converted Numerical Values of Quantities
The use of the factors given in sections B.8 and B.9 to convert values of quantities was demonstrated in section B.3. In most cases, the product of the unconverted numerical value and the factor will be a numerical value with a number of digits that exceeds the number of significant digits (see section 7.9) of the unconverted numerical value. Proper conversion procedure requires rounding this converted numerical value to the number of significant digits that is consistent with the maximum possible rounding error of the unconverted numerical value.

Example: To express the value l = 36 ft in meters, use the factor 3.048 E−01 from section B.8 or section B.9 and write

l = 36 ft × 0.3048 m/ft = 10.9728 m = 11.0 m.

Rounding Guidelines Found on the Internet:
In any math problem, you should wait until the end to round; only the final answer should be rounded. Carry as many significant digits as you can throughout the problem.

Round Off Rule: Round only the final answer not the intermediate values that occur during the calculation. Carry at least twice as many decimal places as will be used in the final answer.

Do the math, then round the answer so that the number of significant figures is equal to the least number of significant figures found in any one measurement in the equation.

For additional background information relative to this item and actions taken by the NTETC Weighing Sector during its 2010 meeting go to: **ncwm.net/content/weighing-archive**

Conclusion:
Mr. Harshman, NIST Technical Advisor, reviewed background information and explained the purpose of the proposal using an example depicting how NIST Handbook 44 Scales Code paragraph S.2.3.1. Monorail Scales Equipped with Digital Indications would apply relative to a 1000 × 5 lb static monorail scale equipped with digital indications. The Sector was then asked whether they still agreed that test criteria needed to be developed for possible future inclusion into NCWM Publication 14 considering that NCWM Publication 14 currently did not include such procedures and that a work group, which was supposed to form to develop test criteria for NCWM Publication 14 following the 2010 NTETC Weighing Sector Meeting had never formed. The Sector considered the example given and agreed that test criteria needs to be developed to verify whether or not scales submitted for type evaluation comply with the tare requirements in NIST Handbook 44 Scales Code paragraph S.2.3.1. A few members of the Sector agreed to work on developing possible test criteria that could be added to NCWM Publication 14 to verify whether a device submitted for type evaluation complies. It was also agreed that the work group would seek input from Mr. Ainsworth, Grain Inspection Packers and Stockyard Administration, and Mr. Vande Berg, Vande Berg Scales, when developing the test criteria.

3. Acceptable Symbols/Abbreviations to Display the Certificate of Conformance (CC) Number Via a Device's User Interface

Sources:

- 2009 NTETC Software Sector Agenda Item 3 and 2010 S&T Item 310-3 G-S.1. Identification. (Software)
- 2010 Final Report of the S&T Committee: **ncwm.net/content/annual-archive**
- 2010 Software Sector summary: **ncwm.net/content/software-archive**
- 2011 Software Sector summary: **ncwm.net/content/software-docs**

Background/Discussion:
Local weights and measures inspectors need a means to determine whether equipment discovered in the field has been evaluated by NTEP. If so, the inspector needs to know at a minimum the CC number. From this starting point, other required information can be ascertained. NIST Handbook 44 currently includes three options for marking of the CC:

1. Permanent marking
2. Continuous display
3. Recall using a special operation

Additional background information relative to this item can be found in 2011 NCWM Publication 16 at: **ncwm.net/content/annual-archive**

During the 2010 NTETC Weighing Sector Meeting, the Sector reviewed an initial list of menu text and icons developed by the NTETC Software Sector and provided comments to the NTETC Software Sector as requested.

At the 2011 NCWM Annual Meeting, NIST, OWM suggested that the S&T Committee consider changing the status of the item from Informational to Developing in order to provide the NTETC Software Sector additional time to more fully develop the item based on the following points:

1. The current proposal is not developed enough for consideration by the S&T Committee. Based on the diversity of comments heard on this issue, NIST, OWM believes the item is not close to a vote and that

considerable work still needs to be done to develop the item before it could be considered for vote by NCWM.

2. NIST, OWM interprets the current proposal to require software be marked with a non-repetitive serial number when in fact it is not the intent of the NTETC Software Sector to require such marking. Thus, it is believed that the language in the current proposal will need modification to resolve this issue.

3. The draft of the March 2011 NTETC Software Sector Summary reported that several NTETC Software Sector members envision G-S.1. being developed further to the extent that G-S.1.1. may not be needed.

The S&T Committee agreed to change the status of this item to Developing because the item was lacking enough information for full consideration and a full proposal has yet to be developed.

Conclusion:
The NTETC Weighing Sector agreed to take no additional action on this item pending further development of the item by the NTETC Software Sector.

NEW ITEMS

4. DES Section 63.4. Out-of-Level Tests (if applicable)

Source:
Mr. Payne Jr., Maryland NTEP laboratory

Background/Discussion:
Mr. Payne, Maryland Department of Agriculture, reports that the NTEP laboratories have to verify the sensitivity of the level indicator on a scale that's been submitted for type evaluation under NTEP's Mutual Recognition Agreement (MRA) with Measurement Canada (MC). An MRA is an agreement whereby the test data from evaluation in either an NTEP authorized laboratory or MC can be used by both countries in the issuance of their respective certifications. Since testing is already being performed by the NTEP laboratories on devices submitted under the MRA, Mr. Payne is recommending that testing the sensitivity of a level indicator be expanded to include all portable scales, so equipped, that are submitted to NTEP for evaluation.

Mr. Payne requests that additional test criteria for testing the suitability of a level indicating means on a portable scale, equivalent to that used by MC be added to NCWM Publication 14 DES Section 63.4. MC's current test criteria for verifying acceptable sensitivity on a scale's level indicating means is as follows:

MC Test Requirements (2011):
MRA. LG-3.05 SUITABILITY OF THE LEVEL INDICATOR
Off Level: -X direction

REFERENCE
Sections 9, 10, 11, and 22 of the Non Automatic Weighing Devices Specifications

APPLICATION
This test is intended for complete portable or movable devices and weighing elements whose performance is affected when off level. Such devices must be equipped with a suitable level indicating means. This test is to ensure that the level indicating means is sensitive enough to accurately indicate the limit of inclination at which the device ceases to perform within tolerances.

SETTINGS
- The Automatic Zero Tracking may be activated. It must be set so that the weight value that can be tracked at once does not exceed 0.6 e.

- If the Initial Zero Setting Mechanism (IZSM) range of the device does not exceed 20 % of Max, the test will be performed with the IZSM set at the maximum of the range.

- If the IZSM range exceeds 20 % of Max, the test will be performed twice: the first test with the IZSM set to the lowest possible value; the second test with the IZSM set to the maximum of its range.

NOTE: In the case of a multi-range device, it is 20 % of Max of the lowest range; in the case of a multi-interval device, it is 20 % of max of the first range.

- The device must be leveled using the level indicating means, and adjusted to as close to zero error as possible.

- If the device has an "enhance" resolution feature, perform the test with that feature activated; or use the small weight method to determine errors before rounding.

- This test is performed at ambient temperature only.

PROCEDURE

1. Incline the DUT in one direction (arbitrary referred to as − x) up to the point of limit where the level indicating means still indicates a level condition or at least 2/1 000 (0.12 degree) whichever is greater.

   LG-3.05 SUITABILITY OF THE LEVEL INDICATOR

   Off Level: X direction

   Off Level: Y direction

   Off Level: − Y direction

2. Set the device to zero if necessary; perform an increasing and decreasing load test. If necessary, use the small weight method to find errors before rounding. Record the results.

3. Record the angle with reference to the horizontal.

4. Repeat the test described above for the other three inclinations (+ x, − y, + y). (See the following illustrations.)

INTERPRETATION OF RESULTS

The device meets the requirements if, at the limits of inclination in all four directions, it performs within applicable limits of error.

Conclusion:

Mr. Payne, Maryland Department of Agriculture, provided the Sector a copy of the MC test requirements used for determining the suitability of a level indicator on a portable scale, and proposed adding similar procedures to NCWM Publication 14. The Sector reviewed the information and agreed that it was appropriate to add test criteria, similar to that used by MC into NCWM Publication 14. The Sector also agreed to recommend that the procedures be added to Section 63.4. Out-of-Level Tests. During its discussions, the work considered whether the test criteria should apply to scales designated Accuracy Class I and concluded that the test criteria should not apply to scales designated Accuracy Class I.

Mr. Harshman, NIST Technical Advisor, noted that while attempting to insert the new draft test procedures into Section 63.4. (i.e., after the 2011 NTETC Weighing Sector Meeting had concluded), it became evident to Mr. Harshman, NIST Technical Advisor, that Section 63.4 was not the most appropriate Section within the DES Section of NCWM Publication 14 to add the new procedures. Mr. Truex, NTEP Administrator, and Mr. Flocken, Chair, were made aware and the decision was made, after consulting with all NTETC Weighing Sector members

present at the 2011 NTETC Weighing Sector Meeting, to add the new procedures to Section 56 Level-Indicting Means – Portable Scales, subsection 56.4. and renumber the current subsection 56.4. to 56.5. The changes recommended by the Sector are:

NCWM Publication 14: DES Section 56.4.

56.3. The level-indicating means is rigidly mounted, easily read, protected from damage, **and** will not change its reference for level**~~, and sufficiently sensitive~~**. ☐ Yes ☐ No ☐ N/A

56.4. The level-indicating means is sufficiently sensitive: ☐ Yes ☐ No ☐ N/A

- **Except for Scales Designated Accuracy Class I, if the scale is equipped with a level-indicating means, the level indicator must be tested to determine whether or not it's sufficiently sensitive.**
- **Level Sensitivity Tests (if applicable)**
- **Test Conditions (both analog and digital indicating scales)**
  - **This test is performed at ambient temperature only.**
  - **The device must be leveled using the level indicating means, and adjusted to as close to zero error as possible.**

Additional Test Conditions Applicable Only to Digital Indicating Scales:

- **The AZT may be activated. It must be set so that the weight value that can be tracked at once does not exceed 0.5 e.**
- **If the IZSM range of the device does not exceed 20 % of Max, the test will be performed with the IZSM set at the maximum of the range.**
- **If the IZSM range exceeds 20 % of Max, the test will be performed twice: the first test with the IZSM set to the lowest possible value; the second test with the IZSM set to the maximum of its range.**
  NOTE: In the case of a multi-range device, it is 20% of Max of the lowest range; in the case of a multi-interval device, it is 20% of max of the first weighing segment.
- **If the device has an "enhance/expanded" resolution feature, perform the test with that feature activated; or use the small weight method to determine errors before rounding.**

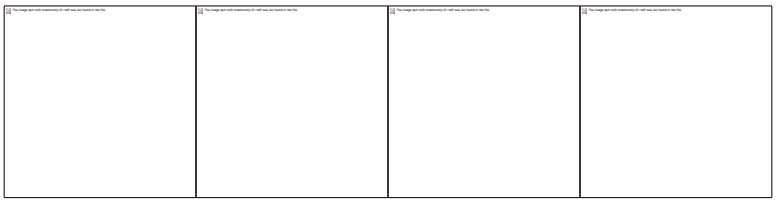
56.4.1. Incline the DUT in one direction (arbitrary referred to as − x) up to the point of limit where the level indicating means still indicates a level condition or at least 2/1 000 (0.12 degree) whichever is greater.

56.4.2. Set the device to zero if necessary; perform an increasing and decreasing load test. If necessary, use the small weight method to find errors before rounding. Record the results.

56.4.3. Record the angle with reference to the horizontal.

56.4.4. Repeat the test described above for the other three inclinations (+ x, − y, + y) (See the following illustrations).

Position of the Bubble Indicator:



56.**45**. Wheel-load weighing and axle-load scales must weigh accurately when placed out-of-level by 5 %.* ☐ Yes ☐ No ☐ N/A

5. DES Section 31. Multi-Interval Scales

Source:
Mr. Davidson, Mettler-Toledo Inc.

Background/Discussion:
Mr. Davidson, Mettler-Toledo, Inc., discovered a discrepancy in DES Section 31 relative to the maximum permissible tare value that can be taken on a multi-interval scale. There are two requirements in this section that seem to contradict each other in regards to the maximum allowed tare value. Those requirements are as follows:

- All tares must be taken in the minimum increment. Therefore, the maximum tare allowed is the maximum capacity of the smallest weighing segment.

- For multi-interval instruments, all tares, except for semi-automatic tare, must be taken in the minimum increment. Therefore, the maximum tare allowed is the maximum capacity of the smallest weighing range.

Mr. Davidson noted that the intent of the requirements is to limit the tare value of all tare types except semi-automatic tare (i.e., push-button tare) to the maximum capacity of the first weighing segment of the device. Thus, to correct the discrepancy, the following changes were suggested:

- ~~**All tares must be taken in the minimum increment. Therefore, the maximum tare allowed is the maximum capacity of the smallest weighing segment.**~~

- ~~**For multi-interval instruments, all tares, except for semi-automatic tare, must be taken in the minimum increment. Therefore, the maximum tare allowed is the maximum capacity of the smallest weighing range.**~~ **Except for semi-automatic tare, all tare values shall not exceed the maximum capacity of the first weighing segment (i.e., Max1).**

This proposed change would harmonize the NTEP requirement with that of International Organization of Legal Metrology (OIML) Recommendation (R) 76 and MC. The following pertinent clauses were copied from those documentary standards:

OIML R 76-1 Edition 2006 Section 4.7.1:
"For a multi-interval instrument, the preset tare value shall be rounded to the smallest verification scale interval, e1, of the instrument, and the maximum preset tare value shall not be greater than Max1."

Measurement Canada Laboratory Manual Section 22.1.5:
"The maximum tare value that may be entered shall not exceed Max1." (Our understanding of the use of the word "entered" in their sentence is describing the entry of a numeric value which would not exceed Max1 and all other tares could be taken to the maximum capacity of the device.)

Conclusion:
The NTETC Weighing Sector reviewed NCWM Publication 14 DES Section 31 and agreed that the referenced requirements thought to be in conflict by the submitter did in fact contradict one another. Mr. Burtini, MC, pointed out, in deference to the submitter's understanding of MC requirements, that MC's type evaluation criteria would not permit a tare entry greater than the capacity of the first weighing segment (Max1) even if that tare were a semi-automatic tare. Considering this difference in U.S. versus MC type evaluation criteria relating to the taking of tare on a multi-interval scale, it was noted that a scale passing MC's test criteria would also pass U.S. criteria, but the opposite would not necessarily hold true. The Sector agreed to recommend the following changes:

NCWM Publication 14: DES Section 31.

The scale indication for a 10-pound load must be 10.00 lb, not 10.000 lb: once the scale has exceeded an internal weight indication of 9.99975 lb, it must round to the next higher weight indication. If 10.000 lb were to be indicated, a load perceived internally as 10.003 lb would result in the scale indicating in some manner that it is no longer sensing 10.000 lb ± 0.0025 lb, hence would then indicate 10.00 lb. This round-off problem is avoided by causing the scale to indicate 10.00 when sensing a load in excess of 9.9975 lb (based upon its internal resolution). The scale will continue to indicate 10.00 lb until its internal resolution senses a load in excess of 10.005 lb, whereupon the weight display will update to 10.01 lb.

There are several considerations regarding the proper operation of tare on multi-interval scales.

- ~~**All tares must be taken in the minimum increment. Therefore, the maximum tare allowed is the maximum capacity of the smallest weighing segment.**~~

- **Except for semi-automatic tare, all tare values shall not exceed the maximum capacity of the first weighing segment (WS1).**

- Whenever gross and tare weights fall in different weighing segments, (hence the scale divisions for the gross and tare weights differ), the net weight must be in mathematical agreement with the gross and tare weights that are indicated and recorded, (e.g., net = gross – tare.)

- Scales that display or record only net weight values (e.g., most computing scales) may semi automatically (pushbutton) take tare values to either the internal resolution or the displayed scale division.

- Manually entered keyboard, thumb-wheel, and digital tare values must be entered to the displayed scale division.

In applying these principles, it is acceptable to:

- Round the indicated and printed tare values to the nearest appropriate net weight scale division. OR

- Display net weight values in scale divisions other than the scale division used in the display of gross weight, as when the gross and tare weights are in different ranges of the device. For example, a scale indicating in two-pound divisions in the lower range and five-pound divisions in the next higher range may result in net values ending in three or eight in the higher range. For example, a multi-interval scale may indicate and record tare weights in a lower weighing segment (WS) and net weights in the higher weighing segment as follows:

55 kg	Gross Weight (WS2 d = 5kg)	10.05 lb	Gross Weight (WS2 d = 0.05 lb)
− 4 kg	Tare Weight (WSR1 d = 2 kg)	− 0.06 lb	Tare Weight (WS1 d = 0.02 lb)
= 51 kg	The Mathematically Correct Net Weight	= 9.99 lb	The Mathematically Correct Net Weight

In every case, it is required to maintain the mathematically correct equation: net = gross – tare

~~**For multi-interval instruments, all tares, except for semi-automatic tare, must be taken in the minimum increment. Therefore, the maximum tare allowed is the maximum capacity of the smallest weighing range.**~~

Semi-automatic tare may be taken to the internal resolution of the scale and any indications or recorded representations of tare shall be rounded to the nearest verification scale division.

6. DES Section 70. - Performance and Permanence Tests for Railway Track Scales Used to Weigh In-Motion

Source:
Mr. Luthy, Stock Equipment Company, Inc.

Background/Discussion:
Mr. Luthy, Stock Equipment Company, Inc., reports that they intend to offer for sale in the United States a commercial application weigh-in-motion railway track scale designed to accurately weigh railway track cars (i.e., within NIST Handbook 44 tolerances) using new technology that utilizes continuous rails (no "rail gaps") on the approaches and weighing areas of the scale. They are currently unable to offer this device for sale in the U.S. in commercial applications because current NTEP type evaluation criteria and NIST Handbook 44 requirements are written in such a way that makes it impossible for devices incorporating this new technology to comply. For example, NIST Handbook 44 Scales Code paragraph UR.2.4. Foundations, Supports, and Clearance requires clearance be provided around all live parts to the extent that no contacts may result. NCWM Publication 14, DES Section 70, Inspect the Scale, Item 4 Rail Gaps states that "the rail gaps should be set at $^{3}/_{8}$ inch." The *AAR Scale Handbook* includes language that allows $^{1}/_{8}$ inch to $^{5}/_{8}$ inch rail gaps. Mr. Luthy notes that there is no clearance, nor are there any rail gaps in a continuous rail. Thus, existing requirements are preventing the marketing and sale of equipment utilizing new technology in commercial applications despite the fact that the equipment complies with current accuracy requirements when installed and used in accordance with the manufacturer's instructions.

Mr. Luthy, Stock Equipment Company, Inc., asked the Sector to review NIST Handbook 44 requirements and NCWM Publication 14 type evaluation criteria that apply to rail gap clearance relative to WIM railway track scale installations and consider amending those requirements to eliminate existing barriers that are hindering the use of new technology. Mr. Harshman, NIST Technical Advisor, noted that other requirements may need to be addressed by the manufacturer of this equipment to enable this equipment to be submitted to NTEP and ultimately be installed and used in commercial applications. The Sector may want to consider reviewing other existing type evaluation criteria applicable to WIM Railway Track Scales and provide guidance to the submitter in other areas of concern.

To address the issue of clearance, Mr. Harshman, NIST Technical Advisor, offered the following proposed amendments/additions to NIST Handbook 44 Scales Code paragraph UR.2.4. and NCWM Publication 14 Section 70 for NTETC Weighing Sector consideration, comments, and recommendations:

NIST Handbook 44 Scales Code:

UR.2.4. Foundation, Supports, and Clearance. – ~~**The foundation and supports of any scale installed in a fixed location shall be such as to provide strength, rigidity, and permanence of all components, and clearance shall be provided around all live parts to the extent that no contacts may result when the load receiving element is empty, nor throughout the weighing range of the scale.** ****On vehicle and livestock scales, the clearance between the load receiving elements and the coping at the bottom edge of the platform shall be greater than at the top edge of the platform.***~~
~~***[*Nonretroactive as of January 1, 1973]***~~

UR.2.4.1. General. – Except for railway track scales that incorporate a continuous rail design (no rail gaps), the foundation and supports of any scale installed in a fixed location shall be such as to provide strength, rigidity, and permanence of all components, and clearance shall be provided around all live parts to the extent that no contacts may result when the load receiving element is empty, nor throughout the weighing range of the scale. ****On vehicle and livestock scales, the clearance between the load receiving elements and the coping at the bottom edge of the platform shall be greater than at the top edge of the platform.***
[*Nonretroactive as of January 1, 1973]

UR.2.4.2. Railway Track Scales That Incorporate a Continuous Rail Design. – Railway track scales that incorporate a continuous rail design (no rail gaps) shall be installed such that:

(a) Clearance shall be provided around all live parts to the extent that no other contacts with the live part of the scale may result when the weighing area element is empty, nor throughout the weighing range of the scale,

(b) The rail that introduces the rail cars to the weighing area and that carries away the rail cars away from the weighing area shall be maintained according to the manufacturer's recommendations, and

(c) The scale area shall be marked or identified with contrasting colors, or other suitable means shall be used to distinguish the weighing area from the area that carries rail cars away from the weighing area.

(Added 20XX)

NCWM Publication 14 DES Section 70.

Inspect the Scale

4. Rail Gaps:
Except for railway track scales that incorporate a continuous rail design (no rail gaps), the rail gaps should be set at $^{3}/_{8}$ inch. AAR Scale Handbook says from $^{1}/_{8}$ inch to $^{5}/_{8}$ inch is allowable. A closed rail gap will have a significant effect on the weight while a large rail gap will take its toll on the rail, load cells, and grout.

Mr. Harshman, NIST Technical Advisor, summarized background information during which time Mr. Luthy, Stock Equipment Company, Inc., provided greater detail in explaining to the sector how the equipment is designed, many of the capabilities of the equipment, and some of the challenges that have been encountered trying to gain acceptance of the equipment into the U.S. marketplace. Mr. Luthy indicated that the system would pass current NIST Handbook 44 tolerances applicable to static railway track scales and uncoupled-in-motion railway track scales, but could not currently offer the Sector any test data to support this claim. Mr. Luthy acknowledged that a system had been installed at a railroad test facility operated by the Transportation Technology Center Inc., Pueblo, Colorado, but testing to verify (or confirm) accuracy had not yet been performed and would be conducted at some later date (yet to be determined). Mr. Luthy also indicated that some U.S. railroads have expressed great interest in purchasing and using this new technology. The most obvious hurdle preventing U.S. acceptance is that there are no rail gaps present in a typical installation of the system. NCWM Publication 14 specifically requires rail gaps and NIST Handbook 44 contains a provision which specifies clearance shall be maintained around all live parts to the extent that contacts do not occur. Since no rail gaps are present, it is not possible that clearance can be maintained around all live parts. Some additional concerns raised and discussed by the sector were as follows:

- Mr. Beitzel, Systems Associates, Inc., questioned how a static section test could be performed on a weighbridge that incorporates six scale sections in only 12 feet of rail. He indicated that the device could not pass current design requirements of the American Railway Engineering Maintenance-of-Way Association (AREMA) and to do so, those requirements would have to be changed. He also questioned whether more stringent permanence testing should be developed and applied to this particular system. Mr. Beitzel agreed that railroad companies would like to see this equipment be made available, noting that they are less concerned about tolerances, which, he indicated, is contrary to the concerns of members of AREMA Committee 34.

- Mr. Truex, NTEP Administrator, pointed out that a plan was being developed to address section testing. He stated that the NTEP Committee is willing to issue a provisional CC upon successful completion of the current evaluation procedures, providing the Sector can recommend the removal of the "rail gap" requirement (assuming testing would be completed before the NTETC Weighing Sector meeting). He then asked whether the Sector would be willing to make such a recommendation. Mr. Truex also agreed with Mr. Harshman, NIST Technical Advisor, that the equipment could not comply with NIST Handbook 44 Scales Code paragraph UR.2.4. Foundation, Supports, and Clearance because clearance is not provided

around all live parts of a railway track scale that has no rail gaps between the approach rails and the weighing/load-receiving element.

- Noting that the NTEP process considers all components of an evaluation, Mr. Flocken, Mettler-Toledo, Inc., questioned whether the sector would want to develop an ad hoc discussion group to develop a list of concerns and a means of addressing them, including the concerns raised by Mr. Beitzel, Systems Associates, Inc..

Conclusion:
The NTETC Weighing Sector was not willing to delete references to the required gaps in the rail until it is proven that the new technology complies with the tolerances in NIST Handbook 44. Thus, the Sector recommended that the applicant move forward with performance testing to confirm that the new technology complies with the tolerances in NIST Handbook 44. The Sector agreed with a recommendation made by Mr. Cook, NIST, OWM, that data resulting from the performance testing needs to be submitted to the Sector prior to the time that the 2012 NTETC Weighing Sector Agenda is developed or the item should not be included as a carry-over item on that agenda.

7. DES Section 57. Device Tolerances

Source:
Mr. Lewis, Rice Lake Weighing Systems, Inc.

Background/Discussion:
Mr. Lewis, Rice Lake Weighing Systems, Inc., has identified a possible error in the acceptance tolerance example of tolerance for separable elements in DES Section 57. Device Tolerances. Mr. Lewis states that the tolerance for separable indicators and weighing element for devices with more than 4000 graduations is currently listed as 1 e. In the example for Class III elements with more than 4000 divisions, the tolerance listed is 2.5 divisions; the truncated division should for "2 e" when error weights are not being used and the scale cannot be put into an expanded mode. If the tolerance is rounded down the allowable error would be 2 not 1 as shown highlighted in the following table.

Example:

Test Indication In Divisions	Tolerance
0 – 500	0
501 – 2 000	0
2 001 – 4 000	1
4 001 – 10 000	~~1~~**2**

Mr. Cook, NIST, OWM, noted that the referenced language and tables have been in NCWM Publication 14 since 1994. Mr. Cook also noted that NIST Handbook 44 paragraph T.N.3.5. Separate Main Elements, Load Transmitting Elements, Indicating Elements, Etc. applies a 0.7 times the applicable tolerance for separable main elements and including elements. Rice Lake Weighing Systems, Inc., may be misinterpreting the language in NCWM Publication 14 by applying the full acceptance tolerances (1.0 factor) before truncating instead of applying the 0.7 factor to the acceptance tolerance before truncating. To reduce the possibility of future misinterpretations of the language, Mr. Cook asked the Sector to review a proposal that he developed to amend DES Section 57. by including applicable NIST Handbook 44 code references, amending the table titled "Acceptance Tolerances" to include tolerance for both complete devices and main elements, and deleting the "Example" table.

Conclusion:
The NTETC Weighing Sector reviewed a proposal submitted by Mr. Cook, NIST, OWM, to replace the entire contents of DES Section 57 and replace it with amended language and a new table thought to be less confusing. The Sector agreed to recommend replacing the entire contents of NCWM Publication 14 Section 57 with that which was proposed by Mr. Cook. The recommended amended language and new table agreed upon by the Sector are the following:

NCWM Publication 14 DES Section 57.

Code References: G-T. 1. (e), T.N.3.2., T.N.3.5., and Table 6.
The acceptance tolerances for complete scales are shown below and apply to complete devices **and separable main elements** during type evaluation.

Acceptance Tolerances (All values in this table are in scale divisions)				
Tolerance in scale divisions				
Complete Devices	0.5	1.0	1.5	2.5
Separable Main Elements[1]	**0.35**	**0.7**	**1.05**	**1.75**
Separable Indications w/o Expanded Resolution	**0**	**0**	**1**	**1**
Class	**Test Load**			
I	0 - 50 000	50 001 - 200 000	200 0001 +	
II	0 - 5 000	5 001 - 20 000	20 0001 +	
III	0 - 500	501 - 2 000	2 001 - 4 000	4 001 +
IIII	0 - 50	51 - 200	201 - 400	401 +
III L	0 - 500	501 - 1 000	(Add 1/2 d for each additional 500 d or fraction thereof)	

[1] When main elements (indicating elements and weighing/load-receiving elements) are tested separately, the tolerance applied to all laboratory tests (influence factors and permanence tests) are 0.7 times the acceptance tolerance for complete scales.

It is strongly recommended that indicating elements submitted separately for evaluation have a test mode providing reading indications to 0.1 e to provide adequate resolution to apply the tolerance **(expanded resolution)**. If the indicator provides indications to only the maximum number of divisions requested for the Certificate of Conformance, the tolerance will be truncated to the number of divisions that can be indicated. ~~**The following tolerances will be applied to class III (and III/III L) indicators.**~~

~~**Example:**~~

~~**Test Indication In Divisions**~~	~~**Tolerance**~~
~~**0 – 500**~~	~~**0**~~
~~**501 – 2 000**~~	~~**0**~~
~~**2 001 – 4 000**~~	~~**1**~~
~~**4 001 – 10 000**~~	~~**12**~~

8. DES Appendix C- Acceptable Abbreviations for Short Ton and Long Ton

Source:
Mr. Lewis, Rice Lake Weighing Systems, Inc.

Background/Discussion:
Mr. Lewis, Rice Lake Weighing Systems, Inc., is recommending adding "tn" as an acceptable abbreviation for a U.S. short ton to the current list of acceptable abbreviation of "Ton" or "TN." Mr. Lewis is also recommending that "lt" be added to the list of acceptable abbreviations for a long ton. He added that the *Canadian Lab Manual*, Part 2, Section Appendix-2A in the table for abbreviations and symbols accepted in Canada, metric ton is abbreviated by "t" and ton (short ton) is abbreviated by "tn."

Conclusion:
Mr. Harshman, NIST Technical Advisor, reviewed background information and reminded the Sector that to be considered an acceptable abbreviation (i.e., for use with equipment manufactured as of January 1, 2008), the abbreviation must be included in either NIST Handbook 44 Appendix C or NIST SP 811 in accordance with NIST Handbook 44 paragraph G S.5.6.1. Indicated and Recorded Representations of Units. Appropriate abbreviations. The NTETC Weighing Sector reviewed acceptable abbreviations for short ton, long ton, and metric ton included in Appendix C of NIST Handbook 44. Mr. Cook, NIST, OWM, pointed out that both short ton and metric ton are abbreviated the same in Appendix C of NIST Handbook 44 (i.e., the short ton is abbreviated on page C-6 as "t" and the metric ton is also abbreviated as "t" on page C-19).

The Sector agreed to add "tn" to the table of Acceptable Abbreviations in Appendix C of NCWM Publication 14 as an acceptable abbreviation for short ton. Mr. Harshman, NIST Technical Advisor, noted that the abbreviation "tn" does not exist in Appendix C of NIST Handbook 44 nor in NIST SP 811 and this change recommended by the sector, if approved, would add the abbreviation to only 1 portion of NCWM Publication 14 table, that is, to the portion titled *Exceptions to General Tables of* NIST Handbook 44. The Sector also agreed to delay taking any action on adding the abbreviation "lt" for long ton until the S&T Committee has had an opportunity to consider the proposal from Mr. Lewis, Rice Lake Weighing Systems, Inc., to amend NIST Handbook 44 by adding the abbreviations "tn" for short ton and "lt" for long ton. NCWM Publication 14 Table of Acceptable Abbreviations incorporating the new abbreviation being recommended by the Sector is:

NCWM Publication 14 DES Appendix C (entire table not shown)

Device Application	Term	Acceptable	NOT Acceptable
*Exceptions to General Tables of *NIST Handbook 44*	carat or carat troy – 200 mg	ct *common jewelry industry abbreviation and is the only acceptable abbreviation in Canada*	ct *not permitted if used as the abbreviation for carat and count on a scale with an enable count feature*
	U.S. short ton	Ton**,** ~~**or**~~ TN **or tn** *for belt-conveyor scales, the abbreviation "T" is acceptable*	
	U.S. long ton	LT	
	Grain	grain, GRN, grn, GN	

9. DES Technical Policy Section D - Substitution of Load Cells in Scales

Source:
Mr. Lewis, Rice Lake Weighing Systems Inc.

Background/Discussion:
NCWM Publication 14 DES Section D – Substitution of Load Cells in Scales paragraph states that metrologically equivalent load cells from the same or a different manufacturer may be substituted into a scale provided that the load cell to be substituted have a capacity that is not less than 85 % of the capacity of the original cell. The current policy may exclude load cells from different manufacturers where the available capacities are not within 85 % to 100 %" of the capacity of the original cell. Mr. Lewis, Rice Lake Weighing Systems Inc., states that in most load cell families, the next lower capacity cell may be less than 85 % of the next larger load cell (assuming that the capacity of the original cell is not included in the load cell family of the different manufacturer). In most cases, the percentage will be 80 %, 75 % or even 50 %. If you were to look at a family of load cell the next smaller load might be 83 % (300 lb to 250 lb), but in most cases the percentage is much less that the 85 % allowed.

Mr. Lewis, Rice Lake Weighing Systems Inc., recommended that the language in DES Section D paragraph six be amended to change the minimum capacity of the of load cell intended to be substituted in a scale from 85 % to the "next lowest load cell in that family." Mr. Cook, NIST, OWM, agreed that the differences between adjacent capacities in a manufacturer's load cell family are frequently lower than 85 %. The following example was copied

from a Rice Lake Weighing Systems, Inc. load cell CC and demonstrates that the next lower capacity load cell is between 50 % and 75 % of the next higher capacity load cell. Mr. Cook explained that the intent of the original language is to help ensure the suitability of the replacement load cell, including parameters such as v_{min}. Mr. Cook suggested that any change to the technical policy be supported by evaluating examples where a suitable capacity load cell is not available (e.g., original cell is in SI units and the potential replacement cell is in customary units).

Conclusion:
The NTETC Weighing Sector discussed the item, during which time, the question was raised whether or not anyone could explain the reason why NTEP had elected to select 85 % as the limiting factor to be used in determining whether or not a load cell of lesser capacity is suitable for use as a substitute for a load cell of greater capacity. It was noted that the 85 % factor has existed in type evaluation criteria for a very long time. No one in attendance could provide a technical justification of why 85 % was selected opposed to some lesser value (e.g., 75 %, 50 %), although some possible reasons were identified and discussed as follows:

- Use of the load cells in customary and SI applications
- The effect of shock loading and other loading characteristics
- Increased sensitivity due to influence factors and disturbances, etc.

After considering and discussing these various possibilities, the sector agreed that it was highly probable that a technical justification existed for selecting 85 %, opposed to some lesser value, and for this reason NCWM Publication 14 should not be changed.

ADDITIONAL ITEMS (NOT INCLUDED ON DRAFT AGENDA)

10. Incorrect Section References and Some Editorial Corrections Needed to NCWM Publication 14

Source:
Mr. Davidson, Mettler-Toledo, Inc.

Background/Discussion:
Mr. Davidson, Mettler-Toledo, Inc., indicated that he had discovered what appeared to be some conflicting section references and other minor editorial errors in NCWM Publication 14 that needed to be corrected as follows:

1. The reference to DES Section 34.7.1. and both references to 34.7.4. are incorrect and should be changed to 34.3.1. and 34.3.4. respectively.

2. Delete “0.5e” in the first sentence of 58.2 and replace it with “the applicable tolerance.” Also, replace the symbol “≤” with the symbol “>”in the formula “(n ≤ 4000)” on the form on page 83 where that formula appears in the last sentence under the form heading titled “For Single Range Scales:”

Conclusion:
The Sector reviewed the language in each of the sections identified by Mr. Davidson, Mettler-Toledo, Inc., and agreed to recommend that each of the sections be corrected as suggested. The changes recommended by the Sector are:

NCWM Publication 14 DES Section 34.3.3.

34.3.3. Individual indications for each load-receiving element - with summed indication. Each individual load-receiving element display must operate within the guidelines defined in section 34.~~7~~3.1. or 34.~~7~~3.4. If the instrument has the ability to operate in a "Sum Only" mode, the summed

display must operate within the guidelines in section 34.~~7~~3.4. In this case, when the system is zeroed:

NCWM Publication 14 DES Section 58.2.

58.2. The deviation on returning to zero as soon as the indication has stabilized, after the removal of any load which has remained on the instrument for 30 minutes, shall not exceed **~~0.5 e.~~ the applicable tolerance.** ☐ Yes ☐ No ☐ N/A

NCWM Publication 14 DES Section 58. Time Dependence Test Form (entire form not shown)

For Single Range Scales:

Check that $|\Delta P| \leq |MPE|$ for Class III L Devices
Check that $|\Delta P| \leq 0.5$ e for Class II and IIII Devices
Check that $|\Delta P| \leq 0.5$ e for Class III Devices ($n \leq 4\,000$ d)
Check that $|\Delta P| \leq 0.83$ e for Class III Devices ($n \leq > 4\,000$ d)

11. Sealing/Capabilities of Smart Junction Boxes

Source:
Mr. Payne, Maryland Department of Agriculture

Background/Discussion:
Maryland Department of Agriculture requested the sector's guidance on the proper means of sealing, and assistance in determining the capabilities of a "smart junction box,"(aka "smart "J" box") which was about to be submitted to the Maryland Laboratory for NTEP certification. Although not confirmed, it was Mr. Payne's belief (based on discussions with an equipment manufacturer) that the "smart junction box" provided a means of remotely accessing calibration and/or configuration adjustments once installed in a scale.

Mr. Truex, NTEP Administrator, pointed out that such adjustments can generally only be carried out through the indicator of a weighing system comprised of separable components (i.e., an indicator, weighing/load-receiving element, and load cells). NTEP evaluates each of these components separately, issuing a separate CC for each component once that component has passed type evaluation criteria. Notations made on the CC by the evaluator typically provide an indication of the compatibility and/or non-compatibility of a component with other separable components.

During the discussion, it was mentioned that several U.S. scale manufacturers, including some who were represented in the room, design and manufacture smart "J" boxes. Mr. Flocken, Mettler-Toledo, Inc., noted that internationally, as many as seven different components of a scale are type evaluated using test criteria contained in OIML Recommendations. He questioned whether the Sector might want to further research the capabilities of "smart "J" boxes" and possibly consider developing type evaluation criteria to evaluate them as separate component of a weighing system.

Conclusion:
The Sector agreed to form a small work group to study the capabilities of this equipment and determine whether or not type evaluation criteria should be developed to evaluate them as a separate component.

NEXT SECTOR MEETING

Two locations for the 2012 NTETC Weighing Sector Meeting are being considered:

1. Annapolis, Maryland; or
2. Ottawa, Canada

Additionally, the Sector considered August 28 - 29, 2012, being the most probable dates for the next meeting.

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