Appendix G

National Type Evaluation Program (NTEP)
Multiple Dimension Measuring Device (MDMD)
Work Group Meeting Summary

April 26 - 27, 2016
Reynoldsburg, Ohio

Item 5200-2

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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

SCHEDULE

i. Introduction and Welcome *(R. Kennington)*

ii. Reiteration of NTEP MDMD Work Group Mission *(D. Flocken)*

Discussion:
Darrell Flocken (NTEP) reviewed the mission of the MDMD WG as stated during the October 2014 and May 2015 WG meeting for the benefit of all participants. The mission of the WG is to deal with specific issues concerning MDMDs; that is, to consider the requirements in NIST Handbook 44 (HB44) and make sure NTEP has a type evaluation checklist in place to verify compliance with HB44 and influence factor testing.

iii. Goal of this Meeting *(D. Flocken)*

Discussion:
The goal for this meeting is to review and update both the Measurement Canada (MC)/NTEP Specification Comparisons document and the NCWM Publication 14 Checklist. In addition, the WG should take this opportunity to discuss any new items brought to the WG's attention.

iv. Report – 2016 NCWM Interim Meeting *(D. Flocken)*

Discussion:
Mr. Darrell Flocken reported that all three proposals submitted from the WG's September 2015 meeting were on the NCWM Specifications and Tolerance Committee agenda for this meeting. Mr. Flocken reported there was a suggestion heard during the open hearings on the proposal permitting some required marks to be available on a separate document if the device is too small to accommodate them. While the comments were not in opposition to the proposal, a suggestion was made for consideration be given to requiring the serial number of the device also be included on the accompanying document. It was mentioned this requirement was already in place for load cells. As no strong opposition to the three proposals were heard during the open hearings, the Specifications and Tolerance Committee recommended that all three proposals remain as presented and be given Voting status for the July 2016 NCWM Annual Meeting.

v. Report – Recent Measurement Canada Type Evaluation Activity *(P. Turgeon)*

Discussion:
Mr. Pascal Turgeon report there has been no type evaluation activity since the September 2015 WG Meeting. Mr. Turgeon did take the opportunity to report several changes in personnel have occurred in the Measurement Canada Laboratory. Ms. Isabelle Trembley and Mr. Justin Rea have both moved to other positions within Measurement Canada.

vi. Report - Recent NTEP MDMD Type Evaluation Activity *(T. Buck)*

Discussion:
Mr. Tom Buck reported the Ohio NTEP Laboratory had received seven evaluation assignments; four assignments were for new devises, and three assignments were for revisions to existing certificates.

INTRODUCTION AND WELCOME

CARRYOVER ITEMS

1. Review meeting summary from September 2015 meeting.

Discussion:
Chairman Kennington asked if there were any changes or additions to the September 2016 Meeting Summary hearing now, he asked for the adoption of the summary. The meeting summary was adopted by unanimous vote.

2. Review changes to NIST Handbook 44, MDMD code since last meeting.

Discussion:
No changes to NIST Handbook 44 have been made since the WG's September 2015 meeting. It was reported the three proposals submitted from the September 2015 WG meeting were on the National S&T's Committee Report with a Voting status for the up coming July 2016 NCWM Annual Meeting.

3. Review changes to NCWM Publication 14, MDMD Checklist.

Discussion:
Mr. D. Flocken reported there has **b**een no changes to the Checklist reviewed and adopted by the WG during their September 2015 meeting. He also reported the Checklist was adopted by the NTEP Committee and is published in the 2016 edition of Publication 14.

4. Review changes to Measurement Canada MDMD Code and Terms and Conditions

Discussion:
Mr. P. Turgeon reported no changes to the Canadian MDMD Code have occurred since the WG's September 2015 meeting.

5. Review update to NTEP/MC Requirements Comparison Document.

Discussion:
Mr. D. Flocken reported on the status of the WG's Comparison Document. No changes have been made to the document since the WG's September 2015 Meeting.

6. Publication 14, MDMD Checklist

Discussion:
It was agreed no changes to the Checklist are required at this time. The WG will review possible changes during their next meeting.

7. Review results of the NTEP/MC Mutual Recognition Agreement discussion at the 2016 NCWM Interim meeting.

Discussion:
Mr. D. Flocken reported at the request of Measurement Canada, the proposal of adding MDMD devices to the NTEP/Measurement Canada Mutual Recognition Agreement document be Withdrawn. The request was made based on comments heard during the NCWM 2016 Interim Meeting. MC felt there was not enough support for the addition. The NCWM NTEP Committee removed the item from their agenda and suggested that if necessary, members of industry can reintroduce the proposal at a later date.

8. Report on progress from multi-interval operation requirements subgroup.

Discussion:
Mr. Rick Harshman (NIST, OWM) provided an update on the progress of three NCWM Form 15 proposals that had been submitted by the MDMD WG to the NCWM in 2015, one of which, was developed by a small subgroup of the MDMD WG formed to address multi-interval MDMDs. Mr. Harshman reviewed the intended purpose of each proposal and noted each had been submitted to the four regional weights and measures associations early enough in 2015 to be considered by each of those regions when they met for their fall meeting. Having been accepted by at least one region, the proposals were then added to the 2016 S&T Committee's agenda and given consideration at the 2016 NCWM Interim Meeting. The proposals appear on the 2016 S&T Committee's agenda as Items 358-1, 358-2, and 358-3. The Committee received many comments in favor of the proposals at the Interim Meeting, which prompted the Committee to assign a Voting status to each proposal. Each proposal will be voted on at the upcoming 2016 NCWM Annual Meeting in July.

Mr. Harshman noted that OWM's Legal Metrology Devices Program had earlier expressed concern in comments to the S&T Committee regarding the proposal (i.e., the Item 358-2 proposal) to allow some marking information to appear on an accompanying document rather than be marked on the device as is currently required by the MDMD Code in NIST HB 44. OWM's concern was the proposal didn't require the serial number of the device to appear on the accompanying document to link the two together, as is required on accompanying documents for load cells in the Scales Code of HB 44. Mr. Harshman also questioned how officials performing a test on an MDMD could immediately tell the value of the measuring division for each axis and range and the minimum and maximum dimensions for each axis if this information doesn't appear on the device. He further noted officials need this information to determine tolerances and to ensure that tests are within the operational parameters set by the manufacturer.

With respect to S&T Item 358-2, Mr. Scott Henry (Zebra Technologies) noted the information proposed for inclusion on the accompanying document can be accessed from a menu on the devices offered by Zebra Technologies, and instructions for accessing the information could be made available on the NTEP CC. It was also reported the value of the measuring division for each axis and range on equipment in which this proposal was intended to apply is fixed and <u>not</u> configurable.

9. Develop Form 15s identified in Requirements Comparison Document.

Discussion:
The WG reviewed the remaining "open" items and agreed that two changes to HB 44 would have value. The items were:

1. The expansion of S.1.7. to include multi-interval devices with the additional proposed changes provides a better explanation of how to apply the 12 d minimum measurement specification and the application of tare with respect to marked maximum dimension for the axes in which tare was applied, and
2. the change in the use of the word "length" to "measurement."

A Form 15 (Appendix A) was developed during the WG meeting and was submitted to the NCWM the following week. A copy of the submitted document is included at the end of this summary document.

NEW ITEMS

10. The impact of MDMD Specifications and tolerances on the LTL trucking business and their use of such devices.

Discussion:
Mr. Don Newell presented an overview of the LTL (Less Then Truckload) trucking business. A copy of Mr. Newell's presentation is included in the distribution of this meeting summary and is provided in Appendix B of this report.

Mr Newell spoke of some of the challenges that LTL trucking companies face when assessing freight charges. Many of the pallets are not uniform and can be difficult to measure. Some are too large to be moved around with a fork lift. Traditional methods of charging by commodity code can have its own challenges. He asked manufacturers of MDMD equipment to consider these realities as they design pallet MDMDs.

Density is one of four factors used by some LTL trucking companies to establish freight class. It is the number one component in determining freight charges. The other three factors are stowing ability, handling, and liability. Density is a ratio of the weight of a product to be shipped divided by its volume in cubic feet (i.e., lb/ft^3). Generally speaking, the higher the density, the lower the price to ship.

11. Discussion on OIML Testing Capability.

Source:
H. Sprague Ackley, Honeywell

Background/Discussion:
In previous meetings, Measurement Canada and Ohio Laboratories have indicated they are looking into what it would take to be able to perform an OIML certification. Mr. Ackley offered to lead a discussion to see whether there is something the MDMD Work Group could do to support this direction.

CLOSING DISCUSSION

12. Review meeting activities and conclusions.

Nothing to report.

13. Define next steps (if needed).

Discussion:
The WG agreed that no specific actions are needed from this meeting. The WG will monitor the three existing and one new proposal and will address their outcome at the next meeting.

14. Chairman's discussion.

Discussion:
Chairman Kennington took this opportunity to comment that he has chaired the WG for close to ten years and expressed interest in resigning from the position. He opened the discussion to others who would be interested in moving into the chair position. No one openly volunteered and the discussion was closed. Mr. D. Flocken and Mr. R. Harshman both commented the WG needs to become more self-operating in that the members should consider appointing document responsibility to WG members.

15. Next meeting

Discussion:
While the last four meetings were held on a semi-annual basis the WG agreed our assigned tasks have been completed and the meeting schedule could return to an annual basis. The WG agreed to have the next meeting on Tuesday and Wednesday, May 2 - 3, 2017. Once again, the Ohio NTEP Laboratory agreed to host the meeting at their location.

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Appendix A

Form 15: Proposal to Amend NIST Handbooks, Bylaws or NTEP Administrative Policy

Proposal to Amend: S.1.7. Minimum Measurement Lengths and

S.1.8. Indications Below Minimum and Above Maximum.

National Conference on Weights and Measures / National Type Evaluation Program

Form 15: Proposal to Amend NIST Handbooks, NCWM Bylaws or NTEP Administrative Policy

23. List of Attachments: Provide a list of all attachments in the order that they are referenced on Form 15. Attachments may include letters, data, studies, or other documents. It is not necessary for attachments to be in Word format.

General Information (See Instructions)			
1. Date: April 27, 2016	**2. Regional Association(s):** (Not applicable for proposals to the Board of Directors or NTEP Committee) _X_ Central (CWMA) _X_ Northeastern (NEWMA) _X_ Southern (SWMA) _X_ Western (WWMA)		
3. Standing Committee:			
__Laws & Regulations X Specifications & Tolerances __Professional Development __Board of Directors __NTEP Committee			
4. Submitter Name: Multiple Dimensioning Measuring Device Work Group (or Darrell Flocken)			
5. Street Address: **1135 M Street, Suite 110**			
6. City: Lincoln	**7. State:** NE	**8. Zip Code:** 68508	**9. Country:** USA
10. Phone Number: 614.620.6134	**11. Fax Number:**	**12. Email Address:** darrell.flocken@ncwm.net	

Proposal Information (See Instructions)

13. Purpose:
Clarification of the application of the minimum measurement and tare operation.

14. Handbook to be Amended:
_X_ *NIST Handbook 44* __ *NIST Handbook 130* __ *NIST Handbook 133* __ *NCWM Bylaws* __ *NTEP Administrative Policy*
Section:
Paragraph:

15. Proposal:

S.1.7. Minimum Measurement ~~Lengths~~. – Except for entries of tare, the minimum **measurement** ~~length to be measured~~ by a device is 12 **d** ~~divisions~~. The manufacturer may specify a longer minimum **measurement** ~~length~~. **For multi-interval devices, this applies only to the first measuring segment.**

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** ~~Lengths~~ 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,** for the object being measured exceeds the measurement capability of the device, the indicating or recording element shall either:

…..

16. Justification:
The MDMD Work Group believes that the expansion of S.1.7. to include multi-interval devices with the additional proposed changes provides a better explanation of how to apply the 12 d minimum measurement specification and the application of tare with respect to marked maximum dimension for the axes in which tare was applied.

This proposal also addresses the change in the use of the word "length" and recommends the use of the word "measurement". The Work Group feels that "measurement" is better suited for all axes.

These proposed changes better harmonize the device specification with those of Measurement Canada.

17. Other Contacts:
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National Conference on Weights and Measures / National Type Evaluation Program

Form 15: Proposal to Amend NIST Handbooks, NCWM Bylaws or NTEP Administrative Policy

18. Other Reasons For: None
19. Other Reasons Against: None
20. Evidence: None
21. Additional Considerations: None
22. Suggested Action: _X_ Recommend NCWM Voting Item ___ Developing Item ___ Informational Item ___ Other (Please Describe):
23. List of Attachments: None

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Appendix B

NMFTA Presentation


NMFTA
Serving the Transportation Industry for Over 50 Years
The LTL (Less Than Truckload) Environment
2


NMFTA
Serving the Transportation Industry for Over 50 Years
National Motor Freight Classification®
STB NMF 100-AN
NMFC®
National Motor Freight Classification™
Effective: February 8, 2014
3

NMFTA
Serving the Transportation Industry for Over 50 Years

Rule For Determination of Shipment Density

Sec. 8. 'Density.'Where classes are based on the density of articles as tendered for shipment, the word 'density' refers to the actual density of the articles shipped, as measured in pounds per cubic foot.

Sec. 8. (a)To determine the density of a handling unit, first determine the cubage of the handling unit by multiplying the greatest straight-line dimensions of length, width and height (depth) in inches, including all projections, if any, as tendered to the carrier for shipment, and dividing the total by 1,728 cubic inches (one cubic foot). The density is the result of the division of the weight of the handling unit as tendered for shipment by the cubic feet. For instance, the density of a handling unit consisting of boxes unitized on a lift truck pallet measuring 48" x 40" x 45" and weighing 450 pounds is determined as follows: 48" x 40" x 45" = 86,400 cubic inches; 86,400 ÷ 1,728 = 50 cubic feet; 450 lbs. ÷ 50 = 9.00 pounds per cubic foot (pcf).

Sec. 8. (b)To determine the density of a cylindrical-shaped handling unit, square the greatest dimension on the cylindrical plane by multiplying the dimension by itself in inches and then multiplying that result by the height or length. Divide the result by 1,728 cubic inches. The density is the result of the division of the weight of the handling unit by the cubic feet.

Sec. 8. (c)Where articles are unitized on lift truck pallets, platforms, racks or skids, the pallet, platform, rack or skid constitutes an integral part of the handling unit, and except as provided in Item 640, Sec. 3 (b), must be included in the computation of density.

4

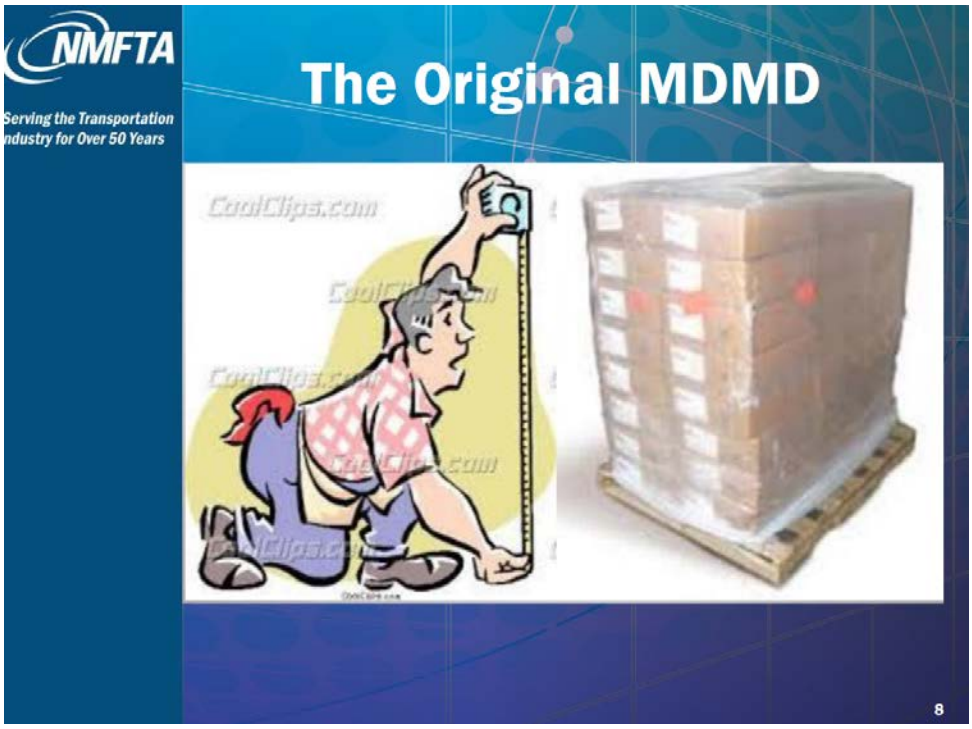
NMFTA
Serving the Transportation Industry for Over 50 Years

Not Unusual in LTL

5


NMFTA
Serving the Transportation Industry for Over 50 Years
Becoming Less Common
Nice, regular package.
Easy to handle.
Easy to stow with no excess space taken up
6

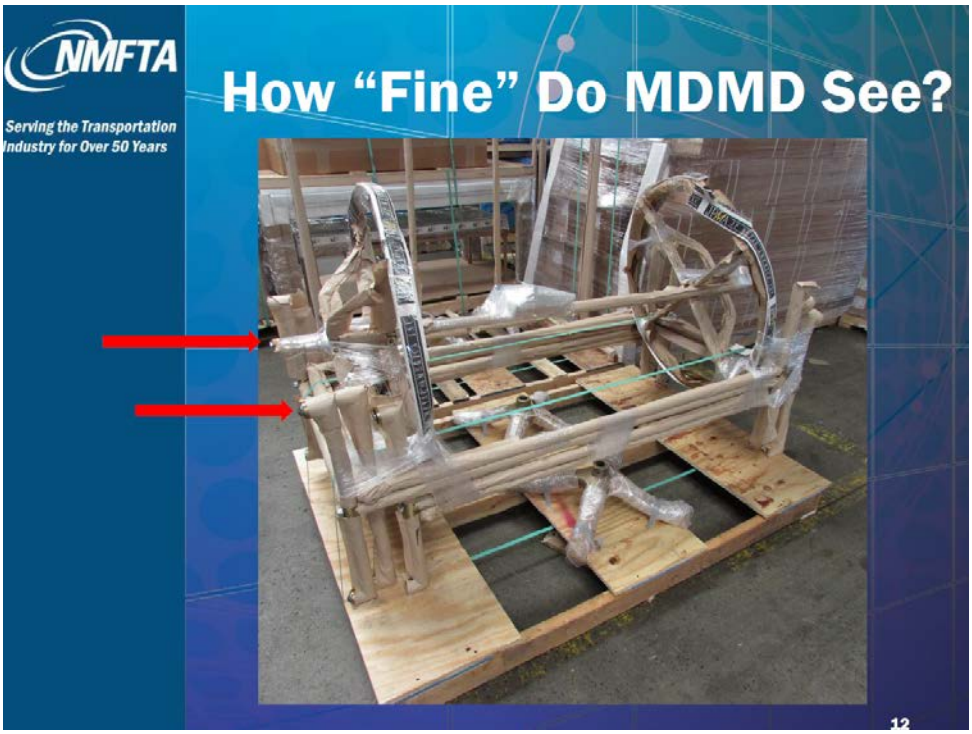

NMFTA
Serving the Transportation Industry for Over 50 Years
Becoming More Common
7


NMFTA
Serving the Transportation Industry for Over 50 Years
The Original MDMD
8

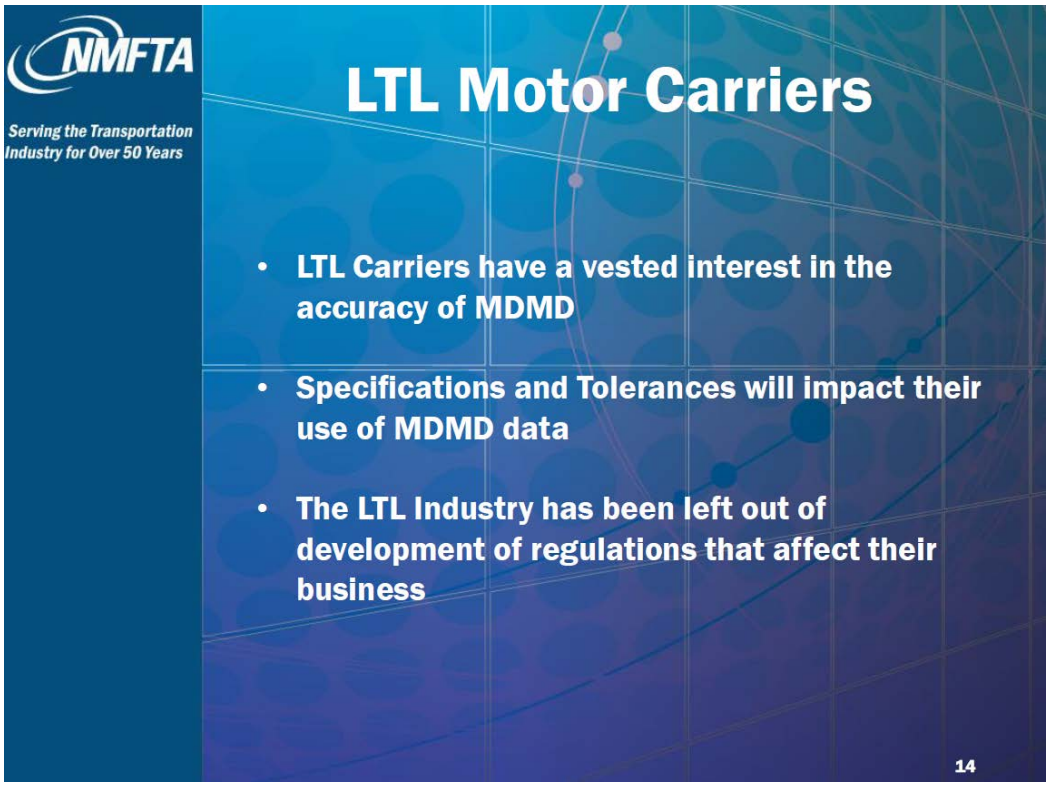

NMFTA
Serving the Transportation Industry for Over 50 Years
The New MDMD
9

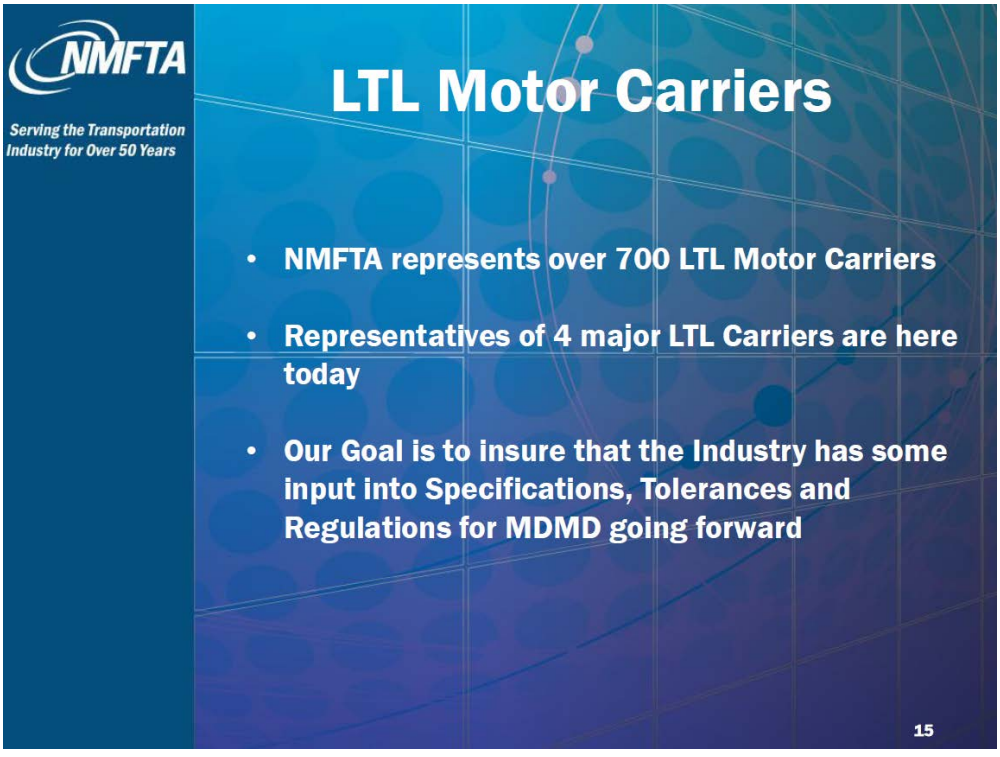

NMFTA
Serving the Transportation Industry for Over 50 Years
How about the inside?
10


NMFTA
Serving the Transportation Industry for Over 50 Years
Portable or Hand-Held MDMD?
11


NMFTA
Serving the Transportation Industry for Over 50 Years
How "Fine" Do MDMD See?
12


NMFTA
Serving the Transportation Industry for Over 50 Years
How "Fine" Do MDMD See?
13


NMFTA
Serving the Transportation Industry for Over 50 Years
LTL Motor Carriers
• LTL Carriers have a vested interest in the accuracy of MDMD
• Specifications and Tolerances will impact their use of MDMD data
• The LTL Industry has been left out of development of regulations that affect their business
14


NMFTA
Serving the Transportation Industry for Over 50 Years
LTL Motor Carriers
• NMFTA represents over 700 LTL Motor Carriers
• Representatives of 4 major LTL Carriers are here today
• Our Goal is to insure that the Industry has some input into Specifications, Tolerances and Regulations for MDMD going forward
15

Appendix C

MDMD Work Group Final Attendee List

April 26 –28, 2016
Reynoldsburg, Ohio

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