

NEWMA Specifications and Tolerances (S&T) Committee 2016 Annual Meeting Report

Ms. Jane Zulkiewicz, Committee Chair
Town of Barnstable, Massachusetts

300 INTRODUCTION

The S&T Committee (hereinafter referred to as the “Committee”) submits this Committee Interim Report for consideration by National Conference on Weights and Measures (NCWM). This report contains the items discussed and actions proposed by the Committee during its Interim Meeting in San Diego, California, January 10-13, 2016. The report will address the following items in Table A during the Annual Meeting. Table A identifies the agenda items by reference key, title of item, and page number and addresses the appendices by appendix designations and page number. The acronyms for organizations and technical terms used throughout the report are identified in Table B. The headings and subjects apply to NIST Handbook 44 *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, 2015 Edition*. The first three digits of an item’s reference key are assigned from the Subject Series List. The status of each item contained in the report is designated as one of the following: **(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; **(I) Informational Item:** the item is under consideration by the Committee but not proposed for Voting; **(V) Voting Item:** the Committee is making recommendations requiring a vote by the active members of NCWM; **(W) Withdrawn Item:** the item has been removed from consideration by the Committee.

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 will entertain 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Committees may change the status designation of agenda items (Developing, Informational, Voting, and Withdrawn) up until the time that the report is adopted, except that items which are marked Developing, Informational or Withdrawn cannot be changed to Voting Status.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.

An “Item Under Consideration” is a statement of proposal and not necessarily a recommendation of the Committee. 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*. Additional letters, presentations, and data may have been part of the Committee’s consideration. Please refer to <http://www.ncwm.net/meetings/annual/publication-16> to review these documents.

Note: The policy of NIST and NCWM is to use metric units of measurement in all of their 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.

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A Background/Discussion on Agenda Items of the S&T Committee A1

Table B
Glossary of Acronyms and Terms

| Acronym | Term | Acronym | Term |
|----------------|---|----------------|--|
| API | American Petroleum Institute | NCWM | National Conference on Weights and Measures |
| CC | Certificate of Conformance | NEWMA | Northeastern Weights and Measures Association |
| CNG | Compressed Natural Gas | NIST | National Institute of Standards and Technology |
| CWMA | Central Weights and Measures Association | NGSC | NCWM Natural Gas Steering Committee |
| DGE | Diesel Gallon Equivalent | NTEP | National Type Evaluation Program |
| DLE | Diesel Liter Equivalent | OIML | International Organization of Legal Metrology |
| DOT | Department of Transportation | OWM | Office of Weights and Measures |
| FALS | Fuels and Lubricants Subcommittee | RMFD | Retail Motor Fuel Dispenser |
| FHWA | Federal Highway Administration | S&T | Specifications and Tolerances |
| GGE | Gasoline Gallon Equivalent | SD | Secure Digital |
| GLE | Gasoline Liter Equivalent | SI | International System of Units |
| GMM | Grain Moisture Meter | SMA | Scale Manufacturers Association |
| GPS | Global Positioning System | SWMA | Southern Weights and Measures Association |
| IEC | International Electrotechnical Commission | TC | Technical Committee |
| LMD | Liquid Measuring Devices | USNWG | U.S. National Work Group |
| LNG | Liquefied Natural Gas | WIM | Weigh-in-Motion |
| MMA | Meter Manufacturers Association | WWMA | Western Weights and Measures Association |

Details of All Items
(In order by Reference Key)

310 HANDBOOK 44 - GENERAL CODE

310-1 V G-S.1. Identification. – (Software)

Source:

This item originated from the NTEP Software Sector and first appeared on NCWM S&T Committee's 2007 agenda as Developing Item Part 1, Item 1. and in 2010 as Item 310-3.

Purpose:

Provide marking requirements that enable field verification of the appropriate version or revision for metrological software, including methods other than "permanently marked," for providing the required information.

Item under Consideration:

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) a 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**)

Background/Discussion: See Appendix A, Page S&T-A6.

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| NEWMA Action: Item 310-1 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| SMA provided comments in support of this item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda <i>(In the case of new items, do not forward to NCWM)</i> <input type="checkbox"/> Developing Item on the NCWM Agenda <i>(To be developed by source)</i> |

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| Reasons for the committee recommendation: |
| The committee believes the item is fully developed and ready for a vote. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA feels this item has been significantly developed and is ready for it to be voted on at the upcoming NCWM Annual Meeting. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

310-2 V G-S.9. Metrologically Significant Software Updates

Source:

NTEP Software Sector (2016)

Purpose:

Clarify that metrologically significant software shall be sealable.

Item under Consideration:

Amend NIST Handbook 44 General Code as follows:

G-S.9. Metrologically Significant Software Updates

A software update that changes the metrologically significant software shall be considered a sealable event.

(Added 20XX)

Background/Discussion: See Appendix A, Page S&T-A11.

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| NEWMA Action: Item 310-2 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| A comment was received questioning whether or not the proposed requirement is needed given that it is believed HB 44 would already require a software update that changes the metrologically significant software be considered a sealable event. A NY state regulator suggested the language be changed and proposed some amended language, but the committee agreed that the language proposed by the regulator would significantly change the intent of the proposal. |
| Item as proposed by the regional committee: (If different than agenda item) |

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| <p>Committee recommendation to the region:</p> <p><input checked="" type="checkbox"/> Voting Item on the NCWM Agenda</p> <p><input type="checkbox"/> Information Item on the NCWM Agenda</p> <p><input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>)</p> <p><input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>)</p> |
| <p>Reasons for the committee recommendation:</p> <p>The Committee believes the item is fully developed and ready for a vote.</p> |
| <p>COMPLETE SECTION BELOW FOLLOWING VOTING SESSION</p> |
| <p>Final updated or revised proposal from the region: (<i>If different than regional committee recommendation</i>)</p> |
| <p>Regional recommendation to NCWM for item status:</p> <p><input checked="" type="checkbox"/> Voting Item on the NCWM Agenda</p> <p><input type="checkbox"/> Information Item on the NCWM Agenda</p> <p><input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>)</p> <p><input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>)</p> <p><input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>)</p> |
| <p>Regional Report to NCWM:</p> <p>Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item.</p> |
| <p>NEWMA forwarded this item to NCWM, recommending it be a Voting item.</p> |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

320 SCALES

320-1 W S.1.1.3. Automated Batching Systems (See Related Item 360-3)

Source:

Richard Suiter Consulting (2016)

Purpose:

Assist weights and measures officials in determining the accuracy and correctness of batching system already in the market place. It will also assist NTEP in future evaluations of these systems.

Item under Consideration:

Amend NIST Handbook 44 Scales Code as follows:

S.1.1.3 Automated batching Systems. – On an automated batching system making more than one draft, between drafts the system must return to a “center-of-zero” condition before a subsequent draft can begin. If the system fails to return to a “center-of-zero” condition the system shall interrupt the weighing sequence and shut down until the non-zero condition has been corrected.

[Nonretroactive as of January 1, 201X]

Background/Discussion: See Appendix A, Page S&T-A12.

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

320-2 V S.5.4. Relationship of Load Cell Verification Interval to the Scale Division

Source:

Scale Manufacturers Association (2016)

Purpose:

Clarify the relationship of v_{\min} with d with multiple independent load receivers.

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 interval, v_{\min} , to the scale division, d , for a specific scale ~~installation~~ using 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 scale (such as hopper, ~~or~~ railroad track or vehicle scale weighing/load receiving elements);

$$(a) \quad v_{\min} \leq \frac{d^*}{\sqrt{N}} \quad \text{for scales without lever systems; and}$$

$$(b) \quad v_{\min} \leq \frac{d^*}{\sqrt{N} \times (\text{scale multiple})} \quad \text{for scales with lever systems.}$$

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 20XX**)

Background/Discussion: See Appendix A, Page S&T-A14.

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| NEWMA Action: Item 320-2 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments heard by several members of industry and regulators supporting the proposal. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee believes that the proposal will clarify the correct application of the Vmin formula to multi-independent platform vehicle scale systems equipped with a totalized indicator. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA forwarded this item to NCWM recommending it as a Voting item on the 2016 agenda. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

320-3 V N.1.3.3.2. Prescribed Test Pattern and Test Loads for Livestock Scales with More Than Two Sections and Combination Vehicle/Livestock Scales and N.1.3.3.3. Prescribed Test Patterns and Test Loads for Two-Section Livestock Scales.

Source:

NIST Office of Weights and Measures (2016)

Purpose:

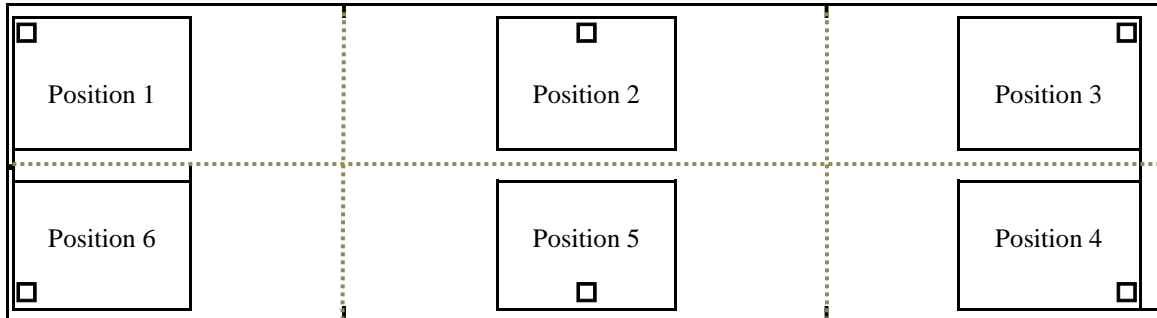
Eliminate inconsistencies in the shift test procedures for two-section livestock scales in the Scales Code of NIST Handbook 44.

Item under Consideration:

Amend NIST Handbook 44 Scales Code as follows:

N.1.3.3.2. Prescribed Test Pattern and Test Loads for Livestock Scales with More Than Two Sections and Combination Vehicle/Livestock Scales. – A minimum test load of 5 000 kg (10 000 lb) or one-half of the rated section capacity, whichever is less, shall be placed, as nearly as possible, successively over each main load

support as shown in the diagram below. For livestock scales manufactured between January 1, 1989, and January 1, 2003, the required loading shall be no greater than one-half CLC. ~~(Two-section livestock scales shall be tested consistent with N.1.3.7. All Other Scales Except Crane Scales, Hanging Scales, Hopper Scales, Wheel-Load Weighers, and Portable Axle-Load Weighers.)~~



N.1.3.3.3. Prescribed Test Patterns and Test Loads for Two-Section Livestock Scales. – A shift test shall be conducted using the following prescribed test loads and test patterns **provided;** When a single field standard weight is used, the prescribed test load shall be applied centrally in the prescribed test pattern. When multiple field standard weights are used as the prescribed test load, the load shall be applied in a consistent pattern in the shift test positions throughout the test and applied in a manner that does not concentrate the load in a test pattern that is less than when that same load is a single field standard weight on the load-receiving element. †The shift test load ~~does~~ shall not exceed one-half the rated section capacity or one-half the rated concentrated load capacity whichever is applicable, using either:

- (a) A one-half nominal capacity test load centered as nearly as possible, successively at the center of each quarter of the load-receiving element as shown in N.1.3.7. All Other Scales Except Crane Scales, Hanging Scales, Hopper Scales, Wheel-Load Weighers, and Portable Axle-Load Weighers Figure 1; or
- (b) A one-quarter nominal capacity test load centered as nearly as possible, successively over each main load support as shown in N.1.3.7. All Other Scales Except Crane Scales, Hanging Scales, Hopper Scales, Wheel-Load Weighers, and Portable Axle-Load Weighers Figure 2.

(Added 2007) (Amended 20XX)

Background/Discussion: See Appendix A, Page S&T-A19.

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| NEWMA Action: Item 320-3 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments heard in support of proposal as it eliminates a conflict between two Scales code paragraphs. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee agrees the changes proposed will eliminate the conflict. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| |

Regional recommendation to NCWM for item status:

- Voting Item on the NCWM Agenda
 Information Item on the NCWM Agenda
 Withdraw the Item from the NCWM Agenda (*In the case of new items, do not forward to NCWM*)
 Developing Item on the NCWM Agenda (*To be developed by source*)
 Unable to consider at this time (*Provide explanation in the "Additional Comments" section below*)

Regional Report to NCWM:

Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. **This will replace any previous reports from your region on this item.**

NEWMA agreed this item helps clarify N.1.3.3.2. and N.1.3.3.3., recommends Voting status to NCWM.

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

322 AUTOMATIC BULK WEIGHING SYSTEMS

322-1 D A. Application, S Specifications, N. Notes, UR. User Requirements

Source:

Kansas (2016)

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.

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 bulk commodity without human intervention. ~~predetermined amounts automatically recording the no-load and loaded weight values and accumulating the net weight of each draft.~~

(Amended 1987)

S. Specifications**S.1. Design of Indicating and Recording Elements and Recorded Representations.**

S.1.1. Zero Indication. – ~~Provisions~~ An Automatic Bulk Weighing System (ABWS) 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.

S.1.5. Recording Sequence. – ~~Provision~~ An ABWS shall ~~be made so that~~ indicate all weight values ~~are indicated~~ until ~~the completion of the~~ recording of the indicated value is completed.

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 ABWS 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 after product flow from the load receiving element is stopped and before product flow into the load receiving element has started. 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 human intervention must be required to restart the system after it is stopped.

S.1.8 Loaded Weight Values – An ABWS shall indicate and record loaded weight values for each weighing.

S.1.9 Net Weight Values – An ABWS shall calculate and record net weight for each weighing.

S.1.10 Net Weight Accumulation – An ABWS shall automatically accumulate and record the sum of all net weight values for each weighing process.

S.3. Interlocks and ~~Gate Control~~Product Flow Control.

S.3.1. Gate PositionProduct Flow Control. – Provision An ABWS shall be made to clearly indicate to the operator product flow status the position of the gates leading directly to and from the weigh hopperload 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.

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) The recording element 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 that allows product to enter or leave the load receiving element, leading directly to or from the weigh hopper is open.~~

S.3.3. Overfill SensorAnd Interference Detection.

- (a) The system must have a means to detect when Tthe weigh hopperload-receiving element shall be equipped with anis overfilled. When an overfill condition exists sensor which will cause the feedproduct 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 human 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)

- (b) If the system is equipped with aDownstream storage devices and other equipment, permanent or temporary, lower garner or surge bin, that garner shall also which have the potential to interfere with weighing 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 human 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)

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

UR. User Requirements

UR.4. System Modification. – **Components of** the 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)

Background/Discussion: See Appendix A, Page S&T-A20.

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| NEWMA Action: Item 322-1 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): SMA takes no position on this item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: This item is currently being developed by the submitter. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports |

from your region on this item.

Comments were heard that this item needs more work; NEWMA recommends to NCWM that it remain a Developing item.

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

322-2 V N.1. Testing Procedures. and T. Tolerances

Source:

Oregon (2015)

Purpose:

Modify the test method to reflect as-used dynamic conditions.

Item under Consideration:

Amend NIST Handbook 44 Automatic Bulk Weighing Systems Code as follows:

N.1.4. Material Tests. – Procedure

1. **Start up the automatic bulk weighting system, including the surrounding equipment which is normally in use when instrument is itself in use.**
2. **Run the system for five weigh cycles (or more if necessary) to ensure normal working conditions.**
3. **Halt the automatic bulk weighting system and record the indication of total mass.**
4. **Run the weighing for not less than five cycles at maximum capacity, minimum capacity and one close to minimum totalized load.**
5. **Halt the automatic bulk weighing system and record the indication of total mass after each run.**
6. **Determine the material test error from the difference between the indicated totalized mass and the total mass of material as determined on the reference scale.**

Either pass a quantity of pre-weighed material through the Automatic Bulk Weighing system in a manner as similar as feasible to actual loading conditions, or weigh all material that has passed through the Automatic Bulk Weighing System. Means for weighing the material test load will depend on the capacity of the system and availability of a suitable reference scale for the test. To assure that the test load is accurately weighed and determined, the following precautions shall be observed:

- (a) **The containers, whether railroad cars, trucks, or boxes, must not leak, and shall not be overloaded to the point that material will be lost.**
- (b) **The actual empty or tare weight of the containers shall be determined at the time of the test. Stenciled tare weight of railway cars, trucks or boxes shall not be used. Gross and tare weights shall be determined on the same scale.**
- (c) **When a pre-weighed test load is passed through the scale, the loading system shall be examined before and after the test to assure that the system is empty and that only the material of the test load has passed through the scale.**

- (d) Where practicable, a reference scale should be tested within 24 hours preceding the determination of the weight of the test load used for a Automatic Bulk Weighing System material test.

A reference scale which is not “as found” within maintenance tolerance should have its accuracy re-verified after the Automatic Bulk Weighing System test with a suitable known weight load if the “as found” error of the Automatic Bulk Weighing System material test exceeds maintenance tolerance values.*

- (e) If any suitable known weight load other than a certified test weight load is used for re-verification of the reference scale accuracy, its weight shall be determined on the reference scale after the reference scale certification and before commencing the Automatic Bulk Weighing System material test.*
- (f) The test shall not be conducted if the weight of the test load has been affected by environmental conditions.

*Note: Even if the reference scale is within maintenance tolerance it may require adjusting to be able to meet paragraph N.1.4.1. Accuracy of Material.

N.1.4.1. Accuracy of Material. – The quantity of material used to conduct a material test shall be weighed on a reference scale to an accuracy within 1/3 of the smallest tolerance to be applied. Scales typically used for this purpose include Class III and III L scales or a scale without a class designation as described in Handbook 44, Section 2.20., Table T.1.1. Tolerances for Unmarked Scales.

N.1.4.2. Associated Equipment. – All associated equipment in local vicinity shall be in operation at time of test. This would include items such as conveyors; tote dumps, cleaning drums, rock separators, ect.

N.1.4. N.1.5. Zero-Balance or No-Load Reference Value Change Test. – A test for change of zero-balance or no-load reference value shall be conducted on all scales after the removal of any test load. The change shall not be more than the minimum tolerance applicable.

~~N.1.5.~~ **N.1.6. Discrimination Test.** – *A discrimination test shall be conducted on all automatic indicating scales with the weighing device in equilibrium at zero-load and at maximum test load, and under controlled conditions in which environmental factors are reduced to the extent that they will not affect the results obtained.*

[Nonretroactive as of January 1, 1986]

~~N.1.5.1.~~ **N.1.6.1. Digital Device.** – On a digital device, this test is conducted from just below the lower edge of the zone of uncertainty for increasing-load tests, or from just above the upper edge of the zone of uncertainty for decreasing-load tests.

(Added 1987)

T.3. Basic Tolerance Values.

T.3.2. For Systems Used to Weigh Grain. – The basic maintenance tolerance shall be 0.1 % and apply to both the test load and material test.

T.3.3. For All Other Systems. – The basic maintenance tolerance shall be 0.2 % and apply to both the test load and material test.

(Amended 1986)

T.5. Repeatability.

T.5.1. Static Test Load – The results obtained by several weighings of the same load under reasonably static test conditions tests shall agree within the absolute value of the maintenance tolerance for that load, and shall be within applicable tolerances.

(Added 1986)

T.5.2. Material Test – **variation in the values obtained during the conduct of material tests shall agree within the absolute value of the maintenance tolerance for that load, and shall be within applicable tolerances.**

Background/Discussion: See Appendix A, Page S&T-A24.

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| NEWMA Action: Item 322-2 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| SMA does not feel this item is fully developed based on the proposal as written. SMA could support the item providing the following three issues discussed in the S&T Report from the 2016 Interim Meeting are incorporated in the proposal before the July Annual Meeting: 1.) Reorganize the requirements in the proposal so they can be more easily followed 2.) Improve the understanding of test procedures; and 3.) Recognize that a material test would be optional and conducted at the discretion of the official. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: <input type="checkbox"/> Voting Item on the NCWM Agenda <input checked="" type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: Based on comments heard and the deadline for a final proposal to be submitted by the end of May 2016, the committee feels the status of this item should be downgraded to Information. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: <input type="checkbox"/> Voting Item on the NCWM Agenda <input checked="" type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| OWM received a revised draft of the proposal from the submitter at the time of the NEWMA meeting. Given the committee's full agenda and possible changes for a final draft version, NEWMA agreed to downgrade the status of this item to Information. This will provide the additional time necessary for OWM and the submitter to make additional changes, if needed. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

325 WEIGH-IN-MOTION SYSTEMS USED FOR VEHICLE ENFORCEMENT SCREENING

325-1 D A. Application. and Sections Throughout the Code to Address Commercial and Law Enforcement Applications

Source:

Rinstrum, Inc. and Right Weigh Innovations (2016)

Purpose:

To recognize a higher accuracy class and appropriate requirements in the Weighing-In-Motion Tentative Code to add commercial and law enforcement applications. In particular, scales meeting the higher accuracy classes would be permitted for use in commercial applications and for highway law enforcement.

Item under Consideration:

Amend NIST Handbook 44, Weigh-In-Motion Systems Tentative Code as follows:

A.1. General. – This code applies to systems used to weigh vehicles, while in motion,;

- (a) For the purpose of screening and sorting the vehicles based on the vehicle weight to determine if a static weighment is necessary.
- (b) For commercial legal for trade applications.
- (c) For direct law enforcement applications.

A.2. Axle-Load Scales – The requirements for axle-load scales apply to such scales in official use for the enforcement of traffic and highway laws or for the collection of statistical information by government agencies and axle-load scales that meet the requirements of the Tentative Code for commercial use.

A.2 3. The code does not apply to weighing systems intended only for the collection of statistical traffic data.

A.3 4. Additional Code Requirements. – In addition to the requirements of this code, Weigh-In-Motion Screening Systems shall meet the requirements of Section 1.10. General Code.

S. Specifications

S.1. Design of Indicating and Recording Elements and of Recorded Representations.

S.1.1. Ready Indication. – The system shall provide a means of verifying that the system is operational and ready for use.

S.1.2. Value of System Division Units. – The value of a system division “d” expressed in a unit of weight shall be equal to:

- (a) 1, 2, or 5; or
- (b) a decimal multiple or submultiple of 1, 2, or 5.

Examples: divisions may be 10, 20, 50, 100; or 0.01, 0.02, 0.05; or 0.1, 0.2, 0.5, etc.

S.1.2.1. Units of Measure. – The system shall indicate weight values using only a single unit of measure.

S.1.3. Maximum Value of Division Size. – ~~The value of the system division “d” for a Class A, Weigh-In-Motion System shall not be greater than 50 kg (100 lb).~~

- (a) **The value of the system division “d” for a Class A, Weigh-In-Motion System shall not be greater than 50 kg (100 lb).**
- (b) **The value of the system division for “d” for a Class B or III L, Weigh-In-Motion System shall not be greater than 10kg (20lb).**

S.1.4. Value of Other Units of Measure.

S.1.4.1. Speed. – Vehicle speeds shall be measured in miles per hour or kilometers per hour.

S.1.4.2. Axle-Spacing (Length). – **If applicable** ~~¶~~the center-to-center distance between any two successive axles shall be measured in:

- (a) feet and inches;
- (b) feet and decimal submultiples of a foot; or
- (c) meters and decimal submultiples of a meter.

S.1.4.3. Vehicle Length. – If the system is capable of measuring the overall length of the vehicle, the length of the vehicle shall be measured in feet and/or inches, or meters.

S.1.5. Capacity Indication. – An indicating or recording element shall not display nor record any values greater than 105% of the specified capacity of the load receiving element.

S.1.6. Identification of a Fault. – Fault conditions shall be presented to the operator in a clear and unambiguous means. The following fault conditions shall be identified:

- (a) Vehicle speed is below the minimum or above the maximum speed as specified.
- (b) The maximum number of vehicle axles as specified has been exceeded.
- (c) A change in vehicle speed greater than that specified has been detected.

S.1.7. Recorded Representations.

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:

- (a) transaction identification number;
- (b) lane identification (required if more than one lane at the site has the ability to weigh a vehicle in-motion);
- (c) vehicle speed;
- (d) number of axles;
- (e) weight of each axle;
- (f) **if applicable** identification and weight of axles groups;
- (g) **if applicable** axle spacing;
- (h) total vehicle weight;
- (i) all fault conditions that occurred during the weighing of the vehicle;
- (j) **if applicable** violations, as identified in paragraph S.2.1., that occurred during the weighing of the vehicle; and
- (k) time & date.

S.1.8. Value of the Indicated and Recorded System Division. – The value of the system’s division “(d)”, as recorded, shall be the same as the division value indicated.

S.2. System Design Requirements.

S.2.1. Violation Parameters. – **If applicable,** ~~T~~the instrument shall be capable of accepting user entered violation parameters for the following items:

- (a) single axle weight limit;
- (b) axle group weight limit;
- (c) gross vehicle weight limit; and
- (d) bridge formula maximum.

The instrument shall display and or record violation conditions when these parameters have been exceeded.

S.3. Design of Weighing Elements.

S.3.1. Multiple Load-Receiving Elements. –An instrument with a single indicating or recording element, or a combination indicating-recording element, that is coupled to two or more load-receiving elements with independent weighing systems, shall be provided with means to prohibit the activation of any load-receiving element (or elements) not in use, and shall be provided with automatic means to indicate clearly and definitely which load receiving element (or elements) is in use.

S.4. Design of Weighing Devices, Accuracy Class.

S.4.1. Designation of Accuracy. – ~~WIM Systems meeting the requirements of this code shall be designated as accuracy Class A.~~

- (a) **WIM Systems for screening and sorting, meeting the requirements of this code shall be designated as accuracy Class A.**
- (b) **WIM Systems for commercial and law enforcement applications, meeting the requirements of this code shall be designated.**
 - (1) **Class III L for the dynamic gross vehicle weight calculations**
 - (2) **Class B for dynamic law enforcement applications**

Note: This does not preclude ~~higher~~ **other** accuracy classes from being proposed and added to this Code in the future when it can be demonstrated that WIM systems grouped within those accuracy classes can achieve the ~~higher~~-level of accuracy specified for those devices.

S.5. Marking Requirements. – In addition to the marking requirements in G-S.1. Identification (except G.S.1.(e)), the system shall be marked with the following information:

- (a) Accuracy Class;
- (b) Value of the System Division “d”;
- (c) Operational Temperature Limits;
- (d) Number of Instrumented Lanes (not required if only one lane is instrumented.);
- (e) Minimum and Maximum Vehicle Speed;
- (f) Maximum Number of Axles per Vehicle;
- (g) Maximum Change in Vehicle Speed during Weighment; and
- (h) Minimum and Maximum Load.

S.5.1. Location of Marking Information. – The marking information required in G-S.1. of the General Code and S.5. shall be visible after installation. The information shall be marked on the system or recalled from an information screen.

N. Notes

N.1. Test Procedures.

N.1.1. Selection of Test Vehicles. – All dynamic testing associated with the procedures described in each of the subparagraphs of N.1.5 shall be performed with a minimum of two test vehicles.

- (a) The first test vehicle may be a two axle, six tire, single unit truck; that is, a vehicle with two axles with the rear axle having dual wheels. The vehicle shall have a ~~maximum~~ **minimum** Gross Vehicle Weight of 10,000 lbs.
- (b) The second test vehicle shall be a ~~five axle~~, single trailer truck with a maximum Gross Vehicle Weight of 80,000 lbs.

Note: Consideration should be made for testing the systems using vehicles which are typical to the systems daily operation.

N.1.1.1. Weighing of Test Vehicles. – All test vehicles shall be weighed on a reference scale before being used to conduct the dynamic tests.

N.1.1.2. Determining Reference Weights for Axle, Axle Groups and Gross Vehicle Weight. – The reference weights shall be the average weight value of a minimum of three static weightings of all single axle, axle groups and gross vehicle weight.

Note: The axles within an axle group **weighed only as an axle group** are not considered single axles.

N.1.2. Test Loads.

N.1.2.1. Static Test Loads. – All static test loads shall use certified test weights

N.1.2.2. Dynamic Test Loads. – Test vehicles used for dynamic testing shall be loaded to 85 to 95% of their legal maximum Gross Vehicle Weight **or as typical in normal use.** The “load” shall be non-shifting and shall be positioned to present as close as possible, an equal side-to-side load.

N.1.3. Reference Scale. – Each reference vehicle shall be weighed statically on a multiple platform vehicle scale comprised of three individual weighing/load receiving elements, each an independent scale. The three individual weighing/load receiving elements shall be of such dimension and spacing to facilitate 1) the single draft weighing of all reference test vehicles, and 2) the simultaneous weighing of each single axle and axle group of the reference test vehicles on different individual elements of the scale; gross vehicle weight determined by summing the values of the different reference axle and reference axle groups of a test vehicle. The scale shall be tested immediately prior to using it to establish reference test loads and in no case more than 24 hours prior. To qualify for use as a suitable reference scale, it must meet NIST Handbook 44, Class III L maintenance tolerances.

N.1.3. Reference Scale. – **Each reference vehicle shall be weighed statically on a certified scale to determine the Gross Vehicle Weight. To qualify for use as a suitable reference scale, it must meet NIST Handbook 44, Class III L maintenance tolerances. The scale shall be tested immediately prior to using it to establish reference test loads and in no case more than 24 hours prior.**

- (a) **For law enforcement applications the reference vehicle shall be weighed on a certified multiple platform vehicle scale comprised of three individual weighing/load-receiving elements, each an independent scale. The three individual weighing/load receiving elements shall be of such dimension and spacing to facilitate 1) the single-draft weighing of all reference test vehicles, and 2) the simultaneous weighing of each single axle and axle group**

of the reference test vehicles on different individual elements of the scale; gross vehicle weight determined by summing the values of the different reference axle and reference axle groups of a test vehicle.

Note: If the distance to an off-site reference scale will significantly impact the accuracy of the reference weights then the scale under test may be used as the reference scale.

- (b) **For commercial applications for the gross vehicle weight calculations only, the reference vehicle shall be weighed statically on either the same scale, a certified multiple platform vehicle scale or a single platform vehicle scale with sufficient length to accommodate single draft weighing of the reference vehicle**

N.1.3.1. Location of a Reference Scale. – The location of the reference scale must be considered as vehicle weights will change due to fuel consumption.

N.1.4. Test Speeds. – All dynamic tests shall be conducted within 20% **above the rated minimum and 20% below the rated maximum speed limits.**

N.1.5. Test Procedures. **For law enforcement scales.**

N.1.5.1. Static Test Procedures. - For Type Approval Evaluation and initial verification the axle-load scale designed for commercial use shall be tested statically to Handbook 44 Class III Tolerances. For subsequent verification the scale will be tested to Handbook 44 Class III L maintenance tolerances.

N.1.5.12. Dynamic Load Test. – The dynamic test shall be conducted using the test vehicles defined in N.1.1. The test shall consist of a minimum of 20 runs for each test vehicle at the speed as stated in N.1.4.

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.

N.1.5.23. Vehicle Position Test. – During the conduct of the dynamic testing ensure that the vehicle stays within the defined roadway along the width of the sensor. The test shall be conducted with 10 runs with the vehicle centered along the width of the sensor, 5 runs with the vehicle on the right side along the width of the sensor, and 5 runs with the vehicle on the left side along the width of the sensor. Only gross vehicle weight is used for this test and the tolerance for each weighment shall be based on the tolerance value specified in T.2.3.

N.1.5.34. Axle Spacing Test. – The axle spacing test is a review of the displayed and/or recorded axle spacing distance of the test vehicles. The tolerance value for each distance shall be based on the tolerance value specified in T.2.4.

N.1.6. Test Procedure for Commercial Gross Vehicle Weight Calculation Scales.

N.1.6.1. As-Used Test Procedures. – A weighing system shall be tested in a manner that represents the normal method of operation.

N.1.6.2. Static Test Procedures. - For Type Approval Evaluation and initial verification the axle-load scale designed for commercial use shall be tested statically to Handbook 44 Class III Tolerances. For subsequent verification the scale will be tested to Handbook 44 Class III L maintenance tolerances.

N.1.6.3. Dynamic Test. – **The dynamic test shall be conducted using the test vehicles defined in N.1.1. The test shall consist of a minimum of 5 runs for each test vehicle at the speed as stated in N.1.4.**

At the conclusion of the dynamic test there will be a minimum of 5 weight readings for the gross vehicle weight of the test vehicle. The tolerance for each weight reading shall be based on Handbook 44 Class III L maintenance tolerances.

T. Tolerances

T.1. Principles.

T.1.1. Design. – The tolerance for a weigh-in-motion system is a performance requirement independent of the design principle used.

T.2. Tolerance Values for Accuracy Class A.

T.2.1. To Tests Involving Digital Indications or Representations – To the tolerances that would otherwise be applied in paragraphs T.2.2 and T.2.3, there shall be added an amount equal to one-half the value of the scale division to account for the uncertainty of digital rounding.

T.2.2. Tolerance Values for Dynamic Load Tests for Screening and Sorting devices. – The tolerance values applicable during dynamic load testing are as specified in Table T.2.2

| Table T.2.2. – Tolerance for Accuracy Class A | |
|--|--|
| <u>Load Description*</u> | <u>Tolerance as a Percentage of Applied Test Load</u> |
| 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. | |

T.2.3. Tolerance Value for Vehicle Position Test. – The tolerance value applied to each gross vehicle weighment is ±10% of the applied test load.

T.2.4. Tolerance Value for Axle Spacing. – The tolerance value applied to each axle spacing measurement shall be ± 0.15 meter (0.5 feet).

T.3. Tolerance Values for Dynamic Weighing Systems Used Commercially and for Direct Law Enforcement.
-The tolerance values applicable during dynamic load testing are as specified in Table T.2.2

| <u>Table T.3. – Tolerance for Commercial and Law Enforcement Dynamic Scales.</u> | |
|---|--|
| <u>Load Description</u> | <u>Tolerance as a Percentage of Applied Test Load</u> |
| <u>Axle Load</u> | <u>±0.5%</u> |

| | |
|-----------------------------|--|
| <u>Axle Group Load</u> | <u>±1%</u> |
| <u>Gross Vehicle Weight</u> | <u>Class III L Maintenance Tolerance</u> |

T.3.4. Influence Factors. – The following factors are applicable to tests conducted under controlled conditions only.

T.3.4.1. Temperature. – Systems shall satisfy the tolerance requirements under all operating temperature unless a limited operating temperature range is specified by the manufacturer.

T.4.5. Radio Frequency Interference (RFI) and Other Electromagnetic Interference Susceptibility. – The difference between the weight indication due to the disturbance and the weight indication without the disturbance shall not exceed the tolerance value as stated in Table T.2.2. or Table T.3 as applicable.

UR. USER REQUIREMENTS

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 and minimum capacity.

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>Dynamic law enforcement axle, axle group and gross vehicle weight.</u> |
| <u>III L</u> | <u>Commercial and direct law enforcement</u> |
| Note: A WIM system with a higher accuracy class than that specified as “typical” may be used. | |

UR.2. User Location Conditions and Maintenance. – The system shall be installed and maintained as defined in the manufacturer’s recommendation.

UR.2.1. System Modification. – The dimensions (e.g., length, width, thickness, etc.) of the load receiving element of a system shall not be changed beyond the manufacturer’s specifications, nor shall the capacity of a scale be increased beyond its design capacity by replacing or modifying the original primary indicating or recording element with one of a higher capacity, except when the modification has been approved by a competent engineering authority, preferably that of the engineering department of the manufacturer of the system, and by the weights and measures authority having jurisdiction over the system.

UR.2.2. Foundation, Supports, and Clearance. – The foundation and supports shall be such as to provide strength, rigidity, and permanence of all components.
On load-receiving elements which use moving parts for determining the load value, 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 system.

UR.2.3. Access to Weighing Elements. – If necessary, adequate provision shall be made for inspection and maintenance of the weighing elements.

UR.2.4. Axle-Load Scales Approaches. – **At each end of an axle-load scale there shall be a straight, paved, and level 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 on the approaches throughout the weighing process.**

UR.3. Maximum Load. – A system shall not be used to weigh a load of more than the marked maximum load of the system.

Background/Discussion: See Appendix A, Page S&T-A30.

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| NEWMA Action: Item 325-1 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| A NCWM task group has formed to further develop a proposal that addresses weigh in motion vehicle scale systems used in commercial and law enforcement applications. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| Item under development with the help of a task group. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA will forward this item to NCWM as a Developing item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

330 LIQUID MEASURING DEVICES

330-1 V S.1.6.3. Return to Zero (See Related Items 331-1 and 332-1)

Source:
Maryland (2016)

Purpose:
Prohibit operation of the reset mechanism during delivery.

Item under Discussion:
Amend NIST Handbook 44 Liquid Measuring Devices Code as follows:

S.1.6.3. Return to Zero.

- (a) The primary indicating elements, and primary recording elements if the device is equipped to record, shall be readily returnable to a definite zero indication. However, a key-lock operated or other self-operated device may be equipped with cumulative indicating or recording elements, provided that it is also equipped with a zero-return indicating element.

It shall not be possible to return primary indicating elements, or primary recording elements beyond the correct zero position.

(c) Primary indicating elements shall not be resettable to zero during a delivery.
(Amended 1972 and 20XX)

Background/Discussion: See Appendix A, Page S&T-A31.

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|---|
| NEWMA Action: Item 330-1 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments heard that the item would harmonize the LMD, VTM, and LPG/NH3 codes with other measuring codes. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee believes the item would improve harmonization of the LMD, VTM, and LPG/NH3 codes with other measuring device codes. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |

Regional Report to NCWM:

Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. **This will replace any previous reports from your region on this item.**

NEWMA recommends forwarding this item as a Voting item to NCWM.

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

330-2 V S.X.X Card Operated Retail Motor Fuel Devices

Source:

North Carolina (2016)

Purpose:

To clarify justification of testing 3 minute time out for credit card operated RMFD.

Item under Discussion:

Amend NIST Handbook 44 Liquid Measuring Devices Code as follows:

S.X.X Pay-At-Pump 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]

Background/Discussion: See Appendix A, Page S&T-A33.

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| NEWMA Action: Item 330-2 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments heard in opposition of a 2 minute time out and numerous comments were heard in support of amending the proposal to a 3 minute time out as specified in Pub. 14 |
| Item as proposed by the regional committee: (If different than agenda item) |
| <i><u>S.X.X 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.</u></i> |
| <i><u>[Nonretroactive as of January 1, 2017]</u></i> |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |

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| Reasons for the committee recommendation: |
| The committee feels the changes highlighted will address the concerns that were raised. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA supports this item be forwarded to NCWM as a voting item provided the two minute timeout currently specified in the Item Under Consideration is increased to three minutes. Consequently, NEWMA supports the committee's revised proposal as shown above beneath the heading "Final updated or revised proposal from the region" being forward to the NCWM as a voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

330-3 V N.4.5 Verification of Linearization Factors.

Source:

Minnesota Weights and Measures Division (2014)

Purpose:

To update Handbook 44 to reflect the technological changes in registers for liquid measuring devices and to alert Weights & Measures officials to the fact that error in start-up and shut-down delivery quantities can introduce linear errors in the calibration at normal flow rates; these errors increase the further the delivered quantity deviates from the prover size used at calibration.

Item Under Consideration:

Amend NIST Handbook 44 Liquid Measuring Devices Code by adding the following:

N.4.5. Verification of Linearization Factors. - All enabled linearization factors shall be verified. The verification of enabled linearization factors shall be done through physical testing, or a combination of physical testing and empirical analysis at the discretion of the official with statutory authority.

UR.4. Maintenance Requirements

UR.4.1. Use of Adjustments. - Whenever a device is adjusted, all enabled linearization factors shall be verified to determine that the errors are in tolerance and any adjustments which are made, shall be made so as to bring performance errors as close as practicable to zero value. The verification of enabled linearization factors shall be done through physical testing, or a combination of physical testing and empirical analysis at the discretion of the official with statutory authority.

Background/Discussion: See Appendix A, Page S&T-A34.

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| NEWMA Action: Item 330-3 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments were heard in support of the item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee grouped this item with 331-4 and feels both agenda items are fully developed and ready for a vote. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA will forward this item to NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

330-4 D Recognized the Use of Digital Density Meters

Source:

Missouri (2016)

Purpose:

Allow the use of digital density meters for inspections of meter for viscous fluids such as motor oils, diesel exhaust fluid (DEF) and antifreeze.

Item under Discussion:

Amend NIST Handbook 44 Liquid Measuring Devices Code as follows:

Develop provisions in various LMD Codes of Handbook 44 that would recognize the use of digital density meters in lieu of volumetric provers, or the use of flasks and thermometers in the case of gravimetric testing) when testing meters used to dispense certain viscous fluids such as motor oil, DEF, antifreeze, syrups, etc..

“Digital density meters may be a solution for testing motor oil, DEF and anti-freeze meters.”

Background/Discussion: See Appendix A, Page S&T-A40.

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| NEWMA Action: Item 330-4 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| No comments were heard on this item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee feels this item needs to be further developed. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the “Additional Comments” section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region’s considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA will forward this item to NCWM as a Developing item. |

Additional letters, presentations and data may have been part of the committee’s consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

331 VEHICLE-TANK METERS

331-1 V S.1.1.5. Return to Zero, S.1.1.6. Initial Zero Indication – Electronic Devices (See Related Items 330-1 and 332-1)

Source:

Maryland (2016)

Purpose:

Ensure that a VTM register starts on zero upon initial authorization by following the manufacturer’s instructions.

Item Under Consideration:

Amend NIST Handbook 44 Vehicle Tank Meter Code as follows:

S.1.1.5. Return to Zero. – Primary indicating elements shall be readily returnable to a definite zero indication. Means shall be provided to prevent the return of primary indicating elements, and of primary recording elements if these are returnable to zero, beyond their correct zero position. **Primary indicating elements shall not be resettable to zero during a delivery.**

Background/Discussion: See Appendix A, Page S&T-A41.

| |
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| NEWMA Action: Item 331-1 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments heard that the item would harmonize the LMD, VTM, and LPG/NH3 codes with other measuring codes. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee believes the item would harmonize the LMD, VTM, and LPG/NH3 codes with other measuring device codes. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA feels this item has been properly developed and will recommend it be a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

331-2 V Table S.2.2. Categories of Sealing and Methods of Sealing (See Related Items 332-4, 334-1, 335-1, 337-1, 338-1 and 339-1)

Source:

Gilbarco, Inc. (2016)

Purpose:

Allow a Category 3 event logger to have an electronic means to transfer the event logger information..

Item under Consideration:

Amend NIST Handbook 44 Vehicle Tank Meter Code as follows:

| Table S.2.2. Categories of Device and Methods of Sealing | |
|--|--|
| <i>Categories of Device</i> | <i>Methods of Sealing</i> |
| Category 1: <i>No remote configuration capability.</i> | <i>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</i> |
| Category 2: <i>Remote configuration capability, but access is controlled by physical hardware.</i> <i>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.</i> | <i>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.</i> |
| Category 3: <i>Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</i> <i>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.</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. A printed copy of the information must be available on demand through the device or through another on-site device. <u>The information may also be available 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 not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</i> |

[Nonretroactive as of January 1, 1995]

(Table Added 2006) (**Amended 20XX**)

Background/Discussion: See Appendix A, Page S&T-A42.

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| NEWMA Action: Item 331-2 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments were heard in support to align these seven device codes with the changes that were adopted in the LMD code (Section 3.30) in 2015. |
| Item as proposed by the regional committee: (If different than agenda item) |
| |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda |

| |
|---|
| <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 332-4, 334-1, 335-1, 337-1, 338-1 and 339-1. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (<i>If different than regional committee recommendation</i>) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332-4, 334-1, 335-1, 337-1, 338-1 and 339-1, recommends to the NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

331-3 D S.3.7. Manifold Hose Flush System

Source:

New York (2016)

Purpose:

Recognize the use of hose flush systems in the HB 44 VTM code.

Item under Consideration:

Amend NIST Handbook 44 Vehicle Tank Meter Code as follows:

S.3.7. Manifold Hose Flush System. – A hose flush system to clear the hose of product may be installed in the manifold when multiple products are dispensed through a single meter and hose under the following conditions:

(a) the inlet valves for the system are conspicuously located above the bottom framework of the truck; and

(b) the inlet valves for the system are not connected to any hose or piping (dust covers are permitted) when not in use; and

(c) the discharge hose remains of the wet hose type; and

(d) the direction of flow for which the system may be set at any time is definitely and conspicuously indicated; and

(e) a recorded representation of each flush is maintained for inspection.

Background/Discussion: See Appendix A, Page S&T-A43.

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| NEWMA Action: Item 331-3 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| The submitter gave a short presentation on fraud/safety. The committee heard comments in support of further development of this item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee looks forward to further development of this item. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| It was requested by the submitter to make this an Information item but NEWMA feels there is still work to be done by the submitter therefore NEWMA recommends the item remain Developing. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

331-4 V N.4.6 Verification of Linearization Factors.

Source:
Minnesota Weights and Measures Division (2014)

Purpose:
To update NIST Handbook 44 to reflect the technological changes in registers for vehicle-tank meters and to alert Weights & Measures officials to the fact that error in start-up and shut-down delivery quantities can introduce linear

errors in the calibration at normal flow rates which increase the further the delivered quantity deviates from the prover size used at calibration.

Item under Consideration:

Amend NIST Handbook 44 Vehicle Tank Meter Code by adding the following:

N.4.6. Verification of Linearization Factors. - All enabled linearization factors shall be verified. The verification of enabled linearization factors shall be done through physical testing, or a combination of physical testing and empirical analysis, at the discretion of the official with statutory authority.

UR.3. Maintenance Requirements

UR.3.1. Use of Adjustments. - Whenever a device is adjusted, all enabled linearization factors shall be verified to determine that the errors are in tolerance and any adjustments which are made, shall be made so as to bring performance errors as close as practicable to zero value. The verification of enabled linearization factors shall be done through physical testing, or a combination of physical testing and empirical analysis at the discretion of the official with statutory authority.

Background/Discussion: See Appendix A, Page S&T-A44.

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| NEWMA Action: Item 331-4 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments were heard in support of the item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee grouped this item with 330-3 and feels both agenda items are fully developed and ready for a vote. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA will forward this item to NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

332 LPG AND ANHYDROUS AMMONIA LIQUID-MEASURING DEVICES

332-1 V S.1.4.2. Return to Zero, S.1.4.3. Initial Zero Indication – Electronic Devices. (See Related Items 330-1 and 331-1)

Source:
Maryland (2016)

Purpose:
Ensure that a register starts on zero upon initial authorization by following the manufacturer’s instructions.

Item under Consideration:
Amend NIST Handbook 44, Liquefied Petroleum Gas and Anhydrous Liquid-Measuring Devices Code as follows:

S.1.4.2. Return to Zero.

- (a) Primary indicating elements shall be readily returnable to a definite zero indication.
- (b) Primary recording elements on a stationary retail device shall be readily returnable to a definite zero indication if the device is equipped to record.
- (c) Means shall be provided to prevent the return of primary indicating elements and of primary recording elements if these are returnable to zero, beyond their correct zero position.
- (d) Primary indicating elements shall not be resettable to zero during a delivery.**

(Amended 1990 **and 20XX**)

Background/Discussion: See Appendix A, Page S&T-A47.

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| NEWMA Action: Item 332-1 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments heard that the item would harmonize the LMD, VTM, and LPG/NH3 codes with other measuring codes. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee believes the item would harmonize the LMD, VTM, and LPG/NH3 codes with other measuring codes 330-1 and 331-1. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
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| Regional recommendation to NCWM for item status: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA will forward this item as a Voting item to NCWM. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

332-2 V S.1.4.3. Provisions for Power Loss, S.1.5.1.1. Unit Price., S.1.5.1.2. Product Identity., S.1.6. For Retail Motor Vehicle Fuel Devices Only., S.1.7. For Wholesale Devices Only. , UR.2.7. Unit Price and Product Identity., and UR.2.8. Computing Device.

Source:

California Department of Food and Agriculture Division of Measurement Standards (2014)

Purpose:

Add similar Specifications and User Requirements for other retail motor-fuel devices to Handbook 44 Section 3.32. Liquefied Petroleum Gas (LPG) and Anhydrous Liquid-Measuring Devices Code similar to those in Section 3.30 Liquid-Measuring Devices, Section 3.37 Mass flow Meters, and Section 3.39 Hydrogen-Gas Measuring Devices Tentative Code.

Item under Consideration:

Amend NIST Handbook 44, Liquefied Petroleum Gas and Anhydrous Liquid-Measuring Devices Code as follows:

S.1.4. For Retail Devices Only.

S.1.4.1. Indication of Delivery. – A retail device shall ~~be constructed to show~~ automatically **show on its face the** initial zero condition and the ~~amounts~~ **quantity** delivered up to the nominal capacity of the device. **However, the following requirements shall apply:**

For electronic devices manufactured prior to January 1, 2006, the first 0.03 L (or 0.009 gal) of a delivery and its associated total sales price need not be indicated.

For electronic devices manufactured on or after January 1, 2006, the measurement, indication of delivered quantity, and the indication of total sales price shall be inhibited until the fueling position reaches conditions necessary to ensure that the delivery starts at zero.

[Nonretroactive as of January 1, 2006]

(Amended 2014)

S.1.5. For Stationary Retail Devices Only.

S.1.5.1. Display of Unit Price and Product Identity. – In a **A** device of the computing type, ~~means~~ shall ~~be provided for~~ displaying on each face ~~of the device~~ the unit price at which the device is set to compute or to deliver ~~as the case may be~~, and there shall be conspicuously displayed on each side of the device the

identity of the product that is being dispensed. ~~If a device is so designed as to dispense more than one grade, brand, blend, or mixture of product, the identity of the grade, brand, blend, or mixture being dispensed shall also be displayed on each face of the device.~~

Except for dispensers used exclusively for fleet sales and other price contract sales, all of the unit prices at which that product is offered for sale shall meet the following conditions:

- (1) For a system that applies a discount prior to the delivery, all unit prices shall be displayed or shall be capable of being displayed on the dispenser through a deliberate action of the purchaser prior to the delivery of the product. It is not necessary that all of the unit prices be simultaneously displayed prior to the delivery of the product.
- (2) For a system that offers post-delivery discounts on fuel sales, display of pre-delivery unit price information is exempt from (1) above, provided the system complies with S.1.5.5. Recorded Representations for Transactions Where a Post-Delivery Discount(s) is Provided.

Note: When a product is offered at more than one unit price, display of the unit price information may be through the deliberate action of the customer: 1) using controls on the device; 2) through the customer's use of personal or vehicle-mounted electronic equipment communicating with the system; or 3) verbal instructions by the customer.

[Nonretroactive as of January 1, 201X]
(Added 201X)

~~S.1.5.3. Recorded Representations, Point-of-Sale Systems. — 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 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; and~~
- ~~(d) — the product identity by name, symbol, abbreviation, or code number.~~

~~(Added 2014)~~

S.1.5.3. Agreement Between Indications.

- (a) When a quantity value indicated or recorded by an auxiliary element is a derived or computed value based on data received from a device, the value may differ from the quantity value displayed on the dispenser, provided that the following conditions are met:
 - (1) all total values for an individual sale that are indicated or recorded by the system agree, and
 - (2) within each element, the values indicated or recorded meet the formula (quantity x unit price = total sales price) to the closest cent.
- (b) When a system applies a post-delivery discount(s) to a fuel's unit price through an auxiliary element, the total volume of the delivery shall be in agreement between all elements in the system.

[Nonretroactive as of January 1, 201X]
(Added 201X)

S.1.5.4. Recorded Representations. – Except for fleet sales and other price contract sales and for transactions where a post-delivery discount is provided, a 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; and

(d) the product identity by name, symbol, abbreviation, or code number.
(Added 2016)

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 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 201X)

S.1.5.6. Transaction Information, Power Loss. In the event of a power loss, the information needed to complete any transaction in progress at the time of the power loss (such as the quantity and unit price, or sales price) shall be determinable for at least 15 minutes at the device or other onsite device accessible to the customer.

[Nonretroactive as of January 1, 201X]

(Added 201X)

S.1.5.7. Totalizers for Retail Motor-Fuel Dispensers. – Retail motor-fuel dispensers shall be equipped with a nonresettable totalizer for the quantity delivered through the metering device.

[Nonretroactive as of January 1, 201X]

(Added 201X)

S.2. Design of Measuring Elements.

...

S.2.5. 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, 201X]

(Added 201X)

S.2.6. S.2.5. Thermometer Well. – For test purposes, means shall be provided to determine the temperature of the liquid either:

- (a) in the liquid chamber of the meter; or
- (b) in the meter inlet or discharge line and immediately adjacent to the meter.

(Amended 1987)

S.2.7.S.2.6. Automatic Temperature Compensation. – A device may be equipped with an adjustable automatic means for adjusting the indication and registration of the measured volume of product to the volume at 15 °C (60 °F).

S.2.7.1S.2.6.1. Provision for Deactivating. – On a device equipped with an automatic temperature-compensating mechanism that will indicate or record only in terms of liters or gallons adjusted to 15 °C (60 °F), provision shall be made to facilitate the deactivation of the automatic temperature-compensating mechanism so that the meter may indicate, and record if it is equipped to record, in terms of the uncompensated volume.
(Amended 1972)

S.2.7.2.S.2.6.2. Provision for Sealing. – Provision shall be made for applying security seals in such a manner that an automatic temperature-compensating system cannot be disconnected and that no adjustment may be made to the system.

UR.2. Use Requirements.

UR.2.7. For Stationary Retail Computing Type Systems Only, Installed After January 1, 201X.

UR.2.7.1. Unit Price and Product Identity.

- (a) **The following information shall be conspicuously displayed or posted on the face of a retail dispenser used in direct sale:**
- (1) **except for unit prices resulting from any post-delivery discount and dispensers used exclusively for fleet sales, other price contract sales, and truck refueling (e.g., truck stop dispensers used only to refuel trucks), all of the unit prices at which the product is offered for sale; and**
 - (2) **in the case of a computing type device or money-operated type device, the unit price at which the dispenser is set to compute.**

Provided that the dispenser complies with S.1.5.1. Display of Unit Price and Product Identity, it is not necessary that all the unit prices be simultaneously displayed or posted.

- (b) **The following information shall be conspicuously displayed or posted on each side of a retail dispenser used in direct sale:**
- (1) **the identity of the product in descriptive commercial terms; and**
 - (2) **the identity of the grade, brand, blend, or mixture that a multi-product dispenser is set to deliver.**

(Added 201X)

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 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 201X)

Background/Discussion: See Appendix A, Page S&T-A49.

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| NEWMA Action: Item 332-2 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| OWM commented that they are in support of the current proposal. |
| Item as proposed by the regional committee: <i>(If different than agenda item)</i> |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda <i>(In the case of new items, do not forward to NCWM)</i> <input type="checkbox"/> Developing Item on the NCWM Agenda <i>(To be developed by source)</i> |
| Reasons for the committee recommendation: |
| The item has been fully developed and is ready for a vote. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: <i>(If different than regional committee recommendation)</i> |
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| <p>Regional recommendation to NCWM for item status:</p> <p><input checked="" type="checkbox"/> Voting Item on the NCWM Agenda</p> <p><input type="checkbox"/> Information Item on the NCWM Agenda</p> <p><input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>)</p> <p><input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>)</p> <p><input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>)</p> |
| <p>Regional Report to NCWM:</p> <p>Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item.</p> |
| <p>NEWMA recommends this item to the NCWM as a Voting item.</p> |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

332-3 V S.2.1. Vapor Elimination

Source:

NIST Office of Weights and Measures (2016)

Purpose:

- 1) To require that the vapor eliminator on LPG and Anhydrous Ammonia liquid-measuring devices be automatic in operation;
- 2) To add the word, "air" to the vapor eliminator requirements for clarification and consistency with other measuring codes; and
- 3) To require that vapor elimination vent lines be made of metal tubing or other rigid material.

Item under Consideration:

Amend NIST Handbook 44, Liquefied Petroleum Gas and Anhydrous Liquid-Measuring Devices Code as follows:

S.2.1. Vapor Elimination. –

(a) A device shall be equipped with an effective ~~automatic vapor eliminator or other effective~~ means to prevent the passage of vapor through the meter.

(b) Vent lines from the vapor eliminator shall be made of appropriate non-collapsible material.

(Amended 20XX)

Background/Discussion: See Appendix A, Page S&T-A60.

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| NEWMA Action: Item 332-3 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| No comments were heard on this item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda |
| <input type="checkbox"/> Information Item on the NCWM Agenda |
| <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) |

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| <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: The Committee grouped this item with item 338-2 and feels both items are ready for a vote. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (<i>If different than regional committee recommendation</i>) |
| Regional recommendation to NCWM for item status: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA recommends this item be forwarded to NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

332-4 V Table S.2.2. Categories of Sealing and Methods of Sealing (See Related Items 331-2, 334-1, 335-1, 337-1, 338-1 and 339-1)

Source:

Gilbarco, Inc. (2016)

Purpose:

Allow a Category 3 event logger to have an electronic means to transfer the event logger information..

Item under Consideration:

Amend NIST Handbook 44 Vehicle Tank Meter Code as follows:

| Table S.2.2. Categories of Device and Methods of Sealing | |
|--|--|
| Categories of Device | Methods of Sealing |
| Category 1: <i>No remote configuration capability.</i> | <i>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</i> |
| Category 2: <i>Remote configuration capability, but access is controlled by physical hardware.</i> <i>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.</i> | <i>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.</i> |
| Category 3: <i>Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</i> <i>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.</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. 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 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.)</i> |

[Nonretroactive as of January 1, 1995]
(Table Added 2006) (**Amended 20XX**)

Background/Discussion: See Appendix A, Page S&T-A62.

| NEWMA Action: Item 332-4 |
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| Summary of comments considered by the regional committee (in writing or during the open hearings): Comments were heard in support to align these seven device codes with the changes that were adopted in the LMD code (Section 3.30) in 2015. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: The committee agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332-4, 334-1, 335-1, 337-1, 338-1, and 339-1. |

| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
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| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332-4, 334-1, 335-1, 337-1, 338-1 and 339-1, recommends to the NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

332-5 V N.3. Test Drafts.

Source:

Endress + Hauser Flowtec AG USA (2015)

Purpose:

Allow transfer standard meters to be used to test and place into service dispensers and delivery system flow meters.

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 one minute at its normal discharge rate.

(Amended 1982)

N.3.2. Transfer Standard Test. – When comparing a meter with a calibrated transfer standard, the test draft shall be equal to at least the amount delivered by the device in 2 minutes at its maximum discharge rate.

Background/Discussion: See Appendix A, Page S&T-A62.

| NEWMA Action: Item 332-5 |
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| Summary of comments considered by the regional committee (in writing or during the open hearings): A comment from industry was heard in opposition of this item that a transfer standard is not prohibited as long as it is less than the 1/3 combined error and uncertainty specified in HB44 fundamental considerations sections 3.2. Another comment was that a transfer standard is not a fuel standard, no data to support a master meter and the definition of "transfer standard" in HB 44 would have to change if adopted. |

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| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: <input type="checkbox"/> Voting Item on the NCWM Agenda <input checked="" type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: The committee grouped this item with item 337-3 and recommended the status of both items be downgraded from voting to information. The committee feels there is insufficient data to support these items at this time. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: <input type="checkbox"/> Voting Item on the NCWM Agenda <input checked="" type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA members could not support this item as Voting. There are too many uncertainties associated with the use of a master meter as a transfer standard for select test methods, e.g., calibration of specific viscosities, no clear definition, no traceability in the use of testing CNG, LNG and LPG. NEWMA recommends this item be downgraded to Information. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

332-6 V N.4.2.3. For Wholesale Devices

Source:

NIST Office of Weights and Measures (2016)

Purpose:

- 1) To specify the purpose of special tests conducted on Wholesale LPG and Anhydrous Ammonia Liquid-Measuring Devices;
- 2) To specify that the special tests are to be conducted at or slightly above the designated flow rates in the referenced paragraph; and
- 3) To specify that the special tests are not to be conducted below the device's marked minimum discharge rate.

Item under Consideration:

Amend NIST Handbook 44, Liquefied Petroleum Gas and Anhydrous Liquid-Measuring Devices Code as follows:

N.4.2.3. For Wholesale Devices. – ~~A wholesale device shall be so tested at a minimum discharge rate of:~~ "Special" tests shall be made to develop the operating characteristics of a measuring system and

any special elements and accessories attached to or associated with the device. “Special” tests shall include a test at or slightly above the slower of the following rates:

- (a) 40 L (10 gal) per minute for a device with a rated maximum discharge less than 180 L (50 gal) per minute;
- (b) 20 % of the marked maximum discharge rate for a device with a rated maximum discharge of 180 L (50 gal) per minute or more; or
- (c) the minimum discharge rate marked on the device, ~~whichever is least.~~

In no case shall the test be performed at a flow rate less than the minimum discharge rate marked on the device.

(Amended 1987 **and 20XX**)

Background/Discussion: See Appendix A, Page S&T-A66.

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| NEWMA Action: Item 332-6 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| No comments were heard in opposition. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee agrees the proposal will align requirements of LPG/NH3 with the LMD code. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the “Additional Comments” section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region’s considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA will forward this item to NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee’s consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

332-7 V UR.2.3. Vapor-Return Line

Source:

NIST Office of Weights and Measures (2016)

Purpose:

Clarify conditions under which the use of an LPG vapor return line connected from a supplier’s tank to a receiving container is or is not permitted.

Item under Consideration:

Amend NIST Handbook 44, Liquefied Petroleum Gas and Anhydrous Liquid-Measuring Devices Code as follows:

UR.2.3. Vapor-Return Line. – During any metered delivery of liquefied petroleum gas from a supplier’s tank to a receiving container, ~~there shall be no a~~ vapor-return line from the receiving container to the supplier’s tank **is prohibited except:**

- (a) in the case of any receiving container to which normal deliveries ~~can~~ **cannot** be made without the use of such vapor-return line; or
- (b) in the case of any ~~new~~ **top spray-fill** receiving container when the ambient temperature is ~~below~~ **at or above** 90 °F (**32 °C**).

(Amended 20XX)

Background/Discussion: See Appendix A, Page S&T-A68.

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| NEWMA Action: Item 332-7 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| No comments were heard on this item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee feels the proposed changes will clarify the conditions for wholesale LPG and Anhydrous Ammonia LMD vapor return lines. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the “Additional Comments” section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region’s considerations, support or opposition, and recommendations. This will replace any previous reports |

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| from your region on this item. |
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| NEWMA will forward this item to NCWM as a Voting item. |
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Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

334 CRYOGENIC LIQUID-MEASURING DEVICES

334-1 V Table S.252. Categories of Sealing and Methods of Sealing (See Related Items 331-2, 332-4, 335-1, 337-1, 338-1 and 339-1)

Source:

Gilbarco, Inc. (2016)

Purpose:

Allow a Category 3 event logger to have an electronic means to transfer the event logger information..

Item under Consideration:

Amend NIST Handbook 44 Vehicle Tank Meter Code as follows:

| Table S.2.5. Categories of Device and Methods of Sealing | |
|--|--|
| Categories of Device | Methods of Sealing |
| Category 1: <i>No remote configuration capability.</i> | <i>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</i> |
| Category 2: <i>Remote configuration capability, but access is controlled by physical hardware.</i> <i>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.</i> | <i>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.</i> |
| Category 3: <i>Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</i> <i>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.</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. 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 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.)</i> |

[Nonretroactive as of January 1, 1995]
(Table Added 2006) (**Amended 20XX**)

Background/Discussion: See Appendix A, Page S&T-A69.

| NEWMA Action: Item 334-1 |
|---|
| Summary of comments considered by the regional committee (in writing or during the open hearings): Comments were heard in support to align these seven device codes with the changes that were adopted in the LMD code (Section 3.30) in 2015. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: The committee agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332-4, 334-1, 335-1, 337-1, 338-1 and 339-1. |

| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
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| Final updated or revised proposal from the region: <i>(If different than regional committee recommendation)</i> |
| Regional recommendation to NCWM for item status: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda <i>(In the case of new items, do not forward to NCWM)</i> <input type="checkbox"/> Developing Item on the NCWM Agenda <i>(To be developed by source)</i> <input type="checkbox"/> Unable to consider at this time <i>(Provide explanation in the "Additional Comments" section below)</i> |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332-4, 334-1, 335-1, 337-1, 338-1 and 339-1, recommends to the NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

335 MILK METERS

335-1 V Table S.2.2. Categories of Sealing and Methods of Sealing (See Related Items 331-2, 332-4, 334-1, 337-1, 338-1 and 339-1)

Source:
Gilbarco, Inc. (2016)

Purpose:
Allow a Category 3 event logger to have an electronic means to transfer the event logger information..

Item under Consideration:
Amend NIST Handbook 44 Vehicle Tank Meter Code as follows:

| Table S.2.3. Categories of Device and Methods of Sealing | |
|--|--|
| Categories of Device | Methods of Sealing |
| Category 1: <i>No remote configuration capability.</i> | <i>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</i> |
| Category 2: <i>Remote configuration capability, but access is controlled by physical hardware.</i> <i>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.</i> | <i>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.</i> |
| Category 3: <i>Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</i> <i>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.</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. 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 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.)</i> |

[Nonretroactive as of January 1, 1995]
(Table Added 2006) (**Amended 20XX**)

Background/Discussion: See Appendix A, Page S&T-A70.

| NEWMA Action: Item 335-1 |
|---|
| Summary of comments considered by the regional committee (in writing or during the open hearings): Comments were heard in support to align these seven device codes with the changes that were adopted in the LMD code (Section 3.30) in 2015. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: The committee agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332-4, 334-1, 335-1, 337-1, 338-1, and 339-1. |

| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
|--|
| Final updated or revised proposal from the region: <i>(If different than regional committee recommendation)</i> |
| Regional recommendation to NCWM for item status: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda <i>(In the case of new items, do not forward to NCWM)</i> <input type="checkbox"/> Developing Item on the NCWM Agenda <i>(To be developed by source)</i> <input type="checkbox"/> Unable to consider at this time <i>(Provide explanation in the "Additional Comments" section below)</i> |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332-4, 334-1, 335-1, 337-1, 338-1 and 339-1, recommends to the NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

337 MASS FLOW METERS

337-1 V Table S.3.5. Categories of Sealing and Methods of Sealing (See Related Items 331-2, 332-4, 334-1, 335-1, 338-1 and 339-1)

Source:

Gilbarco, Inc. (2016)

Purpose:

Allow a Category 3 event logger to have an electronic means to transfer the event logger information..

Item under Consideration:

Amend NIST Handbook 44 Vehicle Tank Meter Code as follows:

| Table S.3.5. Categories of Device and Methods of Sealing | |
|--|--|
| Categories of Device | Methods of Sealing |
| Category 1: <i>No remote configuration capability.</i> | <i>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</i> |
| Category 2: <i>Remote configuration capability, but access is controlled by physical hardware.</i> <i>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.</i> | <i>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.</i> |
| Category 3: <i>Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</i> <i>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.</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. 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 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.)</i> |

[Nonretroactive as of January 1, 1995]

(Table Added 1995) (Amended 1995, 1998, 1999, ~~and~~ 2006 **and 20XX**)

Background/Discussion: See Appendix A, Page S&T-A70.

| NEWMA Action: Item 337-1 |
|---|
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments were heard in support to align these seven device codes with the changes that were adopted in the LMD code (Section 3.30) in 2015. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332-4, 334-1, 335-1, 337-1, 338-1, and 339-1. |

| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
|--|
| Final updated or revised proposal from the region: <i>(If different than regional committee recommendation)</i> |
| Regional recommendation to NCWM for item status: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda <i>(In the case of new items, do not forward to NCWM)</i> <input type="checkbox"/> Developing Item on the NCWM Agenda <i>(To be developed by source)</i> <input type="checkbox"/> Unable to consider at this time <i>(Provide explanation in the "Additional Comments" section below)</i> |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332-4, 334-1, 335-1, 337-1, 338-1 and 339-1, recommends to the NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

337-2 V Appendix D – Definitions: Diesel Liter Equivalent (DLE) and Diesel Gallon Equivalents (DGE) for Compressed Natural Gas and Liquefied Natural Gas; Definition of Gasoline Gallon Equivalent and Gasoline Liter Equivalent for Compressed Natural Gas; S.1.2. Compressed Natural Gas and Liquefied Natural Gas Dispensers; S.1.3.1.1. Compressed Natural Gas Used as an Engine Fuel; S.1.3.1.2. Liquefied Natural Gas Used as an Engine Fuel; S.5.2. Marking of Diesel and Gasoline Volume Equivalent Conversion Factor; Compressed Natural Gas, S.5.3. Marking of Diesel Volume Equivalent Conversion Factor; Liquefied Natural Gas, UR.3.1.1. Marking of Equivalent Conversion Factor for Compressed Natural Gas, UR.3.1.2. Marking of Equivalent Conversion Factor for Liquefied Natural Gas, and UR.3.8. Return of Product to Storage, Retail Compressed Natural Gas and Liquefied Natural Gas

Source:
Clean Vehicle Education Foundation (2014)

Purpose:
Since natural gas is sold in the retail market place as compressed natural gas (CNG) and liquefied natural gas (LNG) an alternative fuel to gasoline and diesel fuel, the proposed additions and edits to Handbook 44 will provide definitions for volume units of CNG and LNG that are the energy equivalents for diesel and/or gasoline gallons so that end users can readily compare cost and fuel economy. At present only equivalents for gasoline are included in NIST Handbooks 44 and 130 for CNG as an engine fuel. The proposal also includes modifications to Appendix D relative to the sale of LNG and CNG.

Item Under Consideration:
Amend NIST Handbook 44 Appendix D to include the following new definition:

diesel gallon equivalent (DGE). – Diesel gallon equivalent (DGE) means 6.384 pounds of compressed natural gas or 6.059 pounds of liquefied natural gas. [3.37]

(Added 2016)

Amend NIST Handbook 44 Appendix D definitions as follows:

gasoline gallon equivalent (GGE). – Gasoline gallon equivalent (GGE) means 5.660 pounds of **compressed** natural gas. [3.37]
(Added 1994) **(Amended 2016)**

Delete the following NIST Handbook 44 Appendix D definition as shown:

~~**gasoline liter equivalent (GLE).** – Gasoline liter equivalent (GLE) means 0.678 kilograms of natural gas. [3.37]
(Added 1994)~~

Amend NIST Handbook 44 Mass Flow Meters Code paragraphs S.1.2., S.1.3.1.1., S.5.2., and UR.3.8. and add new paragraphs S.1.3.1.2., S.5.3., UR.3.1.1. and UR.3.1.2. as follows:

S.1.2. Compressed Natural Gas and Liquefied Natural Gas Dispensers. – Except for fleet sales and other price contract sales, a compressed **or liquefied** natural gas dispenser used to refuel vehicles shall be of the computing type and shall indicate the quantity, the unit price, and the total price of each delivery. The dispenser shall display the mass measured for each transaction either continuously on an external or internal display accessible during the inspection and test of the dispenser, or display the quantity in mass units by using controls on the device.
(Added 1994) **(Amended 2016)**

S.1.3. Units.

S.1.3.1.1. Compressed Natural Gas Used as an Engine Fuel. – When compressed natural gas is dispensed as an engine fuel, the delivered quantity shall be indicated in ~~“gasoline liter equivalent (GLE) units” or “gasoline gallon equivalent (GGE) units”~~ **or diesel gallon equivalent units (DGE), or in mass.** (Also see Appendix D definitions.)
(Added 1994) **(Amended 2016)**

S.1.3.1.2. Liquefied Natural Gas Used as an Engine Fuel. – **When liquefied natural gas is dispensed as an engine fuel, the delivered quantity shall be indicated in diesel gallon equivalent units (DGE) or in mass. (Also see definitions.)**
(Added 2016)

S.5.2. Marking of Gasoline Volume Equivalent Conversion Factors for Compressed Natural Gas. – A device dispensing compressed natural gas shall have either the statement ~~“1 Gasoline Liter Equivalent (GLE) is Equal to 0.678 kg of Natural Gas” or “1 Gasoline Gallon Equivalent (GGE) is Equal~~ **means 5.660 lb of Compressed Natural Gas” or “1 Diesel Gallon Equivalent (DGE) means 6.384 lb of Compressed Natural Gas”** permanently and conspicuously marked on the face of the dispenser according to the method of sale used.
(Added 1994) **(Amended 2016)**

S.5.3. Marking of Equivalent Conversion Factors for Liquefied Natural Gas. – **A device dispensing liquefied natural gas shall have the statement “1 Diesel Gallon Equivalent (DGE) means 6.059 lb of Liquefied Natural Gas” permanently and conspicuously marked on the face of the dispenser according to the method of sale used.**
(Amended 2016)

S.6. Printer. – When an assembly is equipped with means for printing 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 quantity shall be the same value as the indicated quantity, **except that after January 1, 2018 the printed quantity shall also include mass value if mass is not the indicated quantity (Amended 2016)**;

(c) a quantity for a delivery (other than an initial reference value) cannot be recorded until the measurement and delivery has been completed;

(d) the printer is returned to zero when the resettable indicator is returned to zero; and

(e) the printed values shall meet the requirements applicable to the indicated values.

UR.3.1.1. Marking of Equivalent Conversion Factors for Compressed Natural Gas. – A device dispensing compressed natural gas shall have either 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” permanently and conspicuously marked on the face of the dispenser according to the method of sale used. (Added 2016)

UR.3.1.2. Marking of Equivalent Conversion Factors for Liquefied Natural Gas. – A device dispensing liquefied natural gas shall have the statement “1 Diesel Gallon Equivalent (DGE) means 6.059 lb of Liquefied Natural Gas” permanently and conspicuously marked on the face of the dispenser according to the method of sale used. (Added 2016)

UR.3.8. Return of Product to Storage, Retail Compressed and Liquefied Natural Gas Dispensers. – Provisions at the site shall be made for returning product to storage or disposing of the product in a safe and timely manner during or following testing operations. Such provisions may include return lines, or cylinders adequate in size and number to permit this procedure. (Added 1998) (Amended 2016)

Background/Discussion: See Appendix A, Page S&T-A71.

| NEWMA Action: Item 337-2 |
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| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Ethan Bogen, chair of the NGWG commented that new language is being proposed to item 337-2 on one change to the current language under printer requirements S.6b stating that anytime an equivalency value is used for method of sale, the corresponding quantity in mass must be listed on the receipt. An industry representative with fuel marketing and retail groups directed a question to the representative from Gilbarco-is what gets printed on the receipt, a point of sale issue or a method of sale issue? The Gilbarco representative commented it was a point of sale issue. The fuel marketer representative asked is this was practically achievable in the equipment world. Bogren indicated that discussion during working group meetings seemed to indicate that yes, it was practical-only one line would be added to the receipt. This issue was discussed with other manufacturers, and it is feasible but does not currently exist. Another fuel marketer industry representative commented that the info from the dispenser to the point of sale is programmed to convey on the sales transaction information. He further commented that under this new option, the conversion calculation would then become the responsibility of the point of sale manufacturers to accurately capture that conversion. A retired regulator commented that there is no requirement for dual pump displays, so why this information? He added that a single conversion statement could be added as a line of text, but not the calculation itself. Bogren commented that without this change, the working group would be submitted the same item that has failed for the past three years. The representative from Wayne Fueling commented that while he thinks this provision is possible, he isn't recommending it. A retired state W & M official commented that the sellers and the buyers don't care about this, and regulators should not be interfering. Bogren explained that altering the point of sale (POS) software is a relatively easy way to introduce something new for the Conference body to consider. An industry representative from the fuel marketers commented that he is concerned that the POS companies should be consulted on this proposal. Bogren commented that there were POS industry attendees at the joint session who had |

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| an opportunity to comment on this proposal, and they did not object. The fuel marketer industry representative indicated that his members were trying to gather information from their vendors. |
| Item as proposed by the regional committee: (If different than agenda item) |
| <p>Committee recommendation to the region:</p> <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee supports this item provided that system POS controllers are capable of performing the function of printing the information on the receipt. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| <p>Regional recommendation to NCWM for item status:</p> <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA is in support of this item and will recommend to NCWM that it remain Voting. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

337-3 V N.3. Test Drafts.

Source:

Endress + Hauser Flowtec AG USA (2015)

Purpose:

Allow transfer standard meters to be used to test and place into service dispensers and delivery system flow meters.

Item under Consideration:

Amend NIST Handbook 44 Mass Flow Meters Code 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 one minute at its normal discharge rate.

(Amended 1982)

N.3.2. Transfer Standard Test. – When comparing a meter with a calibrated transfer standard, the test draft shall be equal to at least the amount delivered by the device in 2 minutes at its maximum discharge rate.

Background/Discussion: See Appendix A, Page S&T-A97.

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| NEWMA Action: Item 337-3 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| A comment from industry was heard in opposition of this item that a transfer standard is not prohibited as long as it is less than the 1/3 combined error and uncertainty specified in HB44 fundamental considerations sections 3.2. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input checked="" type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee feels there is not enough data to support the item at this time. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input checked="" type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the “Additional Comments” section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region’s considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA recommends this item be changed from a Voting Item to an Information Item at the NCWM July 2016 meeting. |

Additional letters, presentations and data may have been part of the committee’s consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

338 CARBON DIOXIDE LIQUID-MEASURING DEVICES

338-1 V Table S.2.5. Categories of Sealing and Methods of Sealing (See Related Items 331-2, 332-4, 334-1, 335-1, 337-1 and 339-1)

Source:
Gilbarco, Inc. (2016)

Purpose:

Allow a Category 3 event logger to have an electronic means to transfer the event logger information..

Item under Consideration:

Amend NIST Handbook 44 Vehicle Tank Meter Code as follows:

| Table S.2.5. Categories of Device and Methods of Sealing | |
|--|--|
| <i>Categories of Device</i> | <i>Methods of Sealing</i> |
| Category 1: <i>No remote configuration capability.</i> | <i>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</i> |
| Category 2: <i>Remote configuration capability, but access is controlled by physical hardware.</i> <i>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.</i> | <i>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.</i> |
| Category 3: <i>Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</i> <i>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.</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. A printed copy of the information must be available on demand through the device or through another on-site device. <u>The information may also be available 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 not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</i> |

[Nonretroactive as of January 1, 1995]

(Table Added 2006) (**Amended 20XX**)

Background/Discussion: See Appendix A, Page S&T-A98.

| NEWMA Action: Item 338-1 |
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| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments were heard in support to align these seven device codes with the changes that were adopted in the LMD code (Section 3.30) in 2015. |
| Item as proposed by the regional committee: (If different than agenda item) |
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| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda |

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| <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: The committee agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332- 4, 334-1, 335-1, 337-1, 338-1 & 339-1. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (<i>If different than regional committee recommendation</i>) |
| Regional recommendation to NCWM for item status: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332-4, 334-1, 335-1, 337-1, 338-1 and 339-1, recommends to the NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

338-2 V S.3.1. Vapor Elimination

Source:

NIST Office of Weights and Measures (2016)

Purpose:

- 1) To require that the vapor eliminator on carbon dioxide liquid-measuring devices be automatic in operation;
- 2) To add the word, "air" to the vapor eliminator requirements for clarification and consistency with other measuring codes; and
- 3) To require that vapor elimination vent lines be made of metal tubing or other rigid material.

Item under Consideration:

Amend NIST Handbook 44, Carbon Dioxide Liquid-Measuring Devices Code as follows:

S.2.1. Vapor Elimination. –

(a) A ~~measuring system device~~ shall be equipped with an effective ~~automatic vapor eliminator or other effective~~ means to prevent the ~~measurement passage~~ of vapor ~~that will cause errors in excess of the applicable tolerances~~ through the meter.

(b) Vent lines from the vapor eliminator shall be made of appropriate non-collapsible material.

(Amended 20XX)

Background/Discussion: See Appendix A, Page S&T-A99.

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| NEWMA Action: Item 338-2 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| No comments were heard on this item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee grouped this item with item 332-3 and feels both items are ready for a vote. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA recommends that this item be forwarded to NCWM as Voting. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

339 HYDROGEN GAS-METERING DEVICES

339-1 V Table S.3.3. Categories of Sealing and Methods of Sealing (See Related Items 331-2, 332-4, 334-1, 335-1, 337-1 and 338-1)

Source:
Gilbarco, Inc. (2016)

Purpose:
Allow a Category 3 event logger to have an electronic means to transfer the event logger information..

Item Under Consideration:
Amend NIST Handbook 44 Vehicle Tank Meter Code as follows:

| <i>Table S.3.3. Categories of Device and Methods of Sealing</i> | |
|--|--|
| <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 and one for configuration parameters.</i> |
| <i>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.</i> | <i>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.</i> |
| <i>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.</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. A printed copy of the information must be available <u>on demand</u> through the device or through another on-site device. <u>The information may also be available 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 not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</i> |

(Amended 20XX)

Background/Discussion: See Appendix A, Page S&T-A100.

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| NEWMA Action: Item 339-1 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments were heard in support to align these seven device codes with the changes that were adopted in the LMD code (Section 3.30) in 2015. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332-4, 334-1, 335-1, 337-1, 338-1 & 339-1. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA agrees that these proposals would harmonize the language for sealing Category 3 devices in each of these metering codes 331-2, 332-4, 334-1, 335-1, 337-1, 338-1 and 339-1, recommends to the NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

339-2 V Table T.2. Accuracy Classes and Tolerances for Hydrogen Gas-Measuring Devices.

Source:

California (2016)

Purpose:

Temporarily broaden tolerances to reflect the actual capability of the devices.

Item under Consideration:

Amend NIST Handbook 44 Hydrogen Gas-Measuring Devices Code as follows:

| Table T.2. Accuracy Classes and Tolerances for Hydrogen Gas-Measuring Devices | | | |
|---|---|----------------------|-----------------------|
| Accuracy Class | Application or Commodity Being Measured | Acceptance Tolerance | Maintenance Tolerance |
| 2.0 | Hydrogen gas as a vehicle fuel | 1.5 % | 2.0 % |
| 10.0¹ | | 5.0 % | 10.0 % |

¹The tolerance values for Accuracy Class 10.0 hydrogen gas-measuring devices are applicable only until January 1, 2020. Effective January 1, 2020, all hydrogen gas-measuring devices shall meet the tolerance values for Accuracy Class 2.0 and Accuracy Class 10.0 and its associated maintenance and acceptance tolerances will be deleted from Table T.2.

Background/Discussion: See Appendix A, Page S&T-A100.

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| NEWMA Action: Item 339-2 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| Comments were heard that this is a tentative code and that these changes are appropriate while additional test data is being collected. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The Hydrogen Gas-Measuring Devices Code is a tentative code and these changes are appropriate while additional test data is being collected. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA recommends this item be forwarded to NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

354 TAXIMETERS

354-1 V S.1.2. Advancement of Indicating Elements.

Source:

NIST USNWG on Taximeters (2015)

Purpose:

To recognize that, when the use of flat rates or negotiated rates are permitted as passenger charges, the entry of a flat rate or negotiated rate must result in that charge being displayed on the primary indicating element and (if applicable) through the recording element. Also that, at the time a transaction has been completed, there shall be no further advancement of indicated customer charges.

Item under Consideration:

Amend NIST Handbook 44 Taximeter Code as follows:

A.2. Exceptions. – This code does not apply to:

(a) Odometers ~~odometers~~ on vehicles that are rented on a distance basis (for which see Section 5.53. Code for Odometers).

(b) Entities that only charge a flat rate or negotiated rate.

(Amended 1977 **and 201X**)

S.1.2. Advancement of Indicating Elements. – Except when a taximeter is being cleared, the primary indicating and recording elements shall be susceptible of advancement only by the movement of the vehicle or by the time mechanism.

At the conclusion of a transaction (i.e., following the totalizing of all accrued charges and having a customer receipt made available), no other advancement of fare, extras or other charges shall occur until the taximeter has been cleared.

Note: Where permitted, a flat rate or negotiated rate shall be displayed in the “fare” indicating mechanism, provided that once a flat rate or negotiated rate is entered the fare may no longer be advanced by movement of the vehicle or the time mechanism.

(Amended 1988 **and 201X**)

Background/Discussion: See Appendix A, Page S&T-A103.

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| NEWMA Action: Item 354-1 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| A comment was heard suggesting the proposal was poorly written. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input checked="" type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The Committee questioned how the proposed language, "At the conclusion...cleared." would apply to |

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| taximeters that are not equipped with ticket printers and that consideration be given to making this portion of the proposal a user requirement since it is the user that ultimately clears the transaction and not the design of the device. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: <input type="checkbox"/> Voting Item on the NCWM Agenda <input checked="" type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA feels the language being proposed significantly changes that which was originally proposed and that the intent of these changes is not clear. Consequently, NEWMA recommends the status of this item be changed from Voting to Information given the comments received on this item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

354-2 V S.2. Basis of Fare Calculations

Source:

U.S. National Working Group on Taximeters (2016)

Purpose:

To provide a clear statement that more than one rate may be used to calculate a single fare, this proposal would add language to the existing S.2. Basis of Fare Calculations. The changes proposed will also specify that the only time during the sequence of fare calculations at which a change in the rate applied would be permitted to occur.

Item under Consideration:

Amend NIST Handbook 44, Taximeters Code as follows:

S.2. Basis of Fare Calculations. – A taximeter shall calculate fares only upon the basis of:

- (a) distance traveled;
- (b) time elapsed; or
- (c) a combination of distance traveled and time elapsed.

Note: A taximeter may utilize more than one rate to calculate the fare during a trip. Any change in the applied rate must occur at the completion of the current interval.

(Amended 1977 **and 20XX**)

Background/Discussion: See Appendix A, Page S&T-A107.

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| NEWMA Action: Item 354-2 |
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| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| A comment was heard that the item refers to the calculation of distance and time and believes this is very significant. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: The committee feels this item is developed and ready for a vote. The S & T Committee grouped 354-2, 354-3 and 354-4. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA recommends this item to NCWM be a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

354-3 V S.3.2. Flag

Source:

U.S. National Working Group on Taximeters (2016)

Purpose:

Eliminate unnecessary and archaic language from the NIST Handbook 44 Taximeters Code.

Item Under Consideration:

Delete NIST Handbook 44 Taximeters Code paragraph S.3.2. Flag and the definition of the word "Flag" in Appendix D of NIST Handbook 44 as follows:

NIST Handbook 44 Taximeters Code paragraph S.3.2. Flag:

~~S.3.2. Flag.— If the control for the operating condition is a lever arm and flag, the flag shall be at its highest position when the taximeter is cleared, and in this position the whole of the flag shall be above the level of the taximeter housing.~~

NIST Handbook 44 Appendix D definition:

~~flag.—A plate at the end of the lever arm or similar part by which the operating condition of a taximeter is controlled and indicated.[5.54]~~

Background/Discussion: See Appendix A, Page S&T-A107.

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| NEWMA Action: Item 354-3 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| No comments were heard on this item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee feels this item is developed. The S & T Committee grouped together 354-2, 354-3, 354-4. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA will forward this item to NCWM with the recommendation of Voting. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

354-4 V Appendix D - Definitions: Flat Rate and Negotiated Rate

Source:

U.S. National Working Group on Taximeters (2016)

Purpose:

Provide definitions for two terms introduced in a proposed amendment to S.1.2. Advancement of Indicating Elements in the NIST Handbook 44 Taximeters Code.

Item under Consideration:

Amend NIST Handbook 44 Taximeters Code paragraph A.2. Exceptions and add new definitions for “flat rate” and “negotiated rate” to NIST Handbook 44, Appendix D - Definitions as follows:

Amend NIST Handbook 44 Taximeters Code paragraph A.2. Exceptions as follows:

A.2. Exceptions. – This code does not apply to:

(a) Odometers ~~odometers~~ on vehicles that are rented on a distance basis (for which see Section 5.53. Code for Odometers).

(b) Entities that only charge a flat rate or negotiated rate.

(Amended 1977 and 201X)

Add the following definitions to NIST Handbook 44 Appendix D:

flat rate. – a rate selection that when applied results in the indication of a fixed (non-incrementing) amount for passenger charges. This rate shall be included on the statement of established rates that is required to be posted in the vehicle. [5.54]

(Added 201X)

negotiated rate. – a rate selection that when applied results in passenger charges based on a value that has been agreed upon by the operator and passenger. The amount set by a negotiated rate does not increment. [5.54]

(Added 201X)

Background/Discussion: See Appendix A, Page S&T-A108.

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| NEWMA Action: Item 354-4 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| No comments were heard specific to this item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee feels this item is developed. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the “Additional Comments” section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region’s considerations, support or opposition, and recommendations. This will replace any previous reports |

| |
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| from your region on this item. |
| NEWMA will recommend this item to NCWM as Voting Item. |

Additional letters, presentations and data may have been part of the committee’s consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

354-5 D USNWG on Taximeters – Taximeter Code Revisions and Global Positioning System-Based Systems for Time and Distance Measurement

Note: This item was originally titled “Item 360-5 S.5. Provision for Security Seals” in the Committee’s 2013 Interim Agenda. At the 2013 NCWM Interim Meeting, the Committee combined that item with “Item 354-1 Global Positioning Systems for Taximeters” and “Item 360-6 Global Positioning Systems for Taximeters” to create this new, consolidated item to address the development of recommendations on multiple topics related to taximeters and GPS-based time and distance measuring systems.

Source:
NIST USNWG on Taximeters

Purpose:
Develop recommendations for modifying the existing Taximeters Code to reflect current technology (including requirements for sealing, display requirements, and other features) and to examine GPS-based time and distance measuring systems to determine how to best address these measuring systems in NIST Handbook 44 to ensure accuracy and transparency for passengers and businesses.

Item under Consideration:
This item is under development. Comments and inquiries may be directed to Mr. John Barton (NIST OWM) at 301-975-4002 or john.barton@nist.gov.

The USNWG is considering proposals to modify the sealing requirements in the Taximeters Code to reflect more advanced sealing methods (see 2012 NCWM Final S&T Report); to amend the Taximeters Code to specifically recognize GPS-based time and distance measuring systems; and to amend other sections of the Taximeters Code to reflect current technology and business practices while ensuring accuracy and transparency for customers and a level playing field for transportation service companies.

Background/Discussion: See Appendix A, Page S&T-A109.

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| NEWMA Action: Item 354-5 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): A comment was heard that the GPS subcommittee disbanded. A task group is heading up the development of this item and will present a final draft to NIST in June 2016. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: The committee looks forward to further development. |

| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
|--|
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA feels the USNWG on Taxi Meters is very close to modifying the Taximeter code to reflect current technology to suit the GPS based systems. It is recommended to the NCWM that it remain Developing Item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

354-6 D Transportation Network Systems – Draft code

Source:

California Department of Food and Agriculture, Division of Measurement Standards (2016)

Purpose:

Create an Informational item to engage the weights and measures community in a discussion to create a code section within HB 44 for transportation measuring devices that determine fares using GPS to calculate time and distance.

Item under Consideration:

Amend NIST Handbook 44, Taximeter Code as follows:

- Rename Section 5.54. Taximeters to Transportation Measuring Devices;
- Within Section 5.54., create Section 5.54.(a) for Taximeters and Section 5.54.(b) for Transportation Network Systems;
- Move current requirements in Section 5.54. Taximeters to Section 5.54(a). Taximeters; and
- Add draft requirements for Transportation Network Systems to new Section 5.54.(b) as presented here:

Transportation Network Systems – Tentative Code

This tentative code has only a trial or experimental status and is not intended to be enforced. The requirements are designed for study prior to the development and adoption of a final code. Officials wanting to conduct an official examination of a device or system are advised to see paragraph G-A.3. Special and Unclassified Equipment.

(Tentative Code Added 20XX)

A. Application

A.1. General. – **This code applies to systems that utilize Global Positioning System (GPS) software and associated equipment or other comparable software-based system to determine distance and time, separately or simultaneously, to calculate a rate or rates and indicate the charge for hire of a vehicle or other mode of transport.**

A.2. Exceptions. – **This code does not apply to taximeters that use distance measurement transducer or odometers on vehicles that are rented on a distance basis (for which see Section 5.53. Code for Odometers).**

A.3. Additional Code Requirements. – **In addition to the requirements of this code, Transportation Network Systems shall meet the requirements of Section 1.10. General Code.**

S. Specifications

S.1. Design of Indicating and Recording Elements.

S.1.1. General. – **A system shall be equipped with a primary indicating element and may be equipped with a recording element.**

S.1.1.1. Recording Elements. – **A receipt providing information as required in S.1.9. Recorded Representations shall be available from the system or other means through an integral or separate recording element for all transactions conducted.**

S.1.2. Identification. – **The system 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) **the current software version or revision identifier shall be:**
 - (1) **prefaced by words or an abbreviation that clearly identifies the number as the required version or revision.**
 - i. **Abbreviations for the word “Version” shall, as a minimum, begin with the letter “V” and may be followed by the word “Number”;**
 - ii. **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.);**
 - (2) **directly linked to the software itself.**
- (c) **a California Type Evaluation Program (CTEP) Certificate of Approval (COA) number or a corresponding COA Addendum Number. The COA Number or a corresponding COA Addendum Number shall be prefaced by the terms “CTEP COA,” “COA,” 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.).**
- (d) **If the system is it designed such that it consists of more than one part, the part dedicated to the metrologically significant software shall be clearly identified.**

S.1.3. Location of Marking Information. – **The required information in S.1.2. Identification. shall be:**

- (a) **continuously displayed; or**

(b) accessible through an easily recognized menu and, if necessary, a submenu. Examples of menu and submenu identification include, but are not limited to, “Help,” “System Identification,” “Weights and Measures Identification,” or “Identification.”

Note: Clear instructions for accessing the location of the information required in S.1.2. Identification, shall be listed on the CTEP COA, including information necessary to identify that the software is the same type that was evaluated.

S.1.4. Advancement of Indicating Elements. – Except when a system is being reset, the primary indicating and recording elements shall be susceptible of advancement only by the movement of the vehicle or the time mechanism.

S.1.5. Visibility of Indications. – The indication of fare shall be available at the beginning of the transaction. All fares shall be available whenever the vehicle is hired and in operation. All indications of passenger interest shall be displayed to the passenger, either in the vehicle from a distance of 1.2 m (4 ft) under any condition of normal operation, or on a device operated by the passenger. If the display is not on continuously, it shall be accumulated continuously so that real-time measurement is displayed during activation, no more than every 60 seconds. (Nonretroactive as of 20XX)

S.1.5.1. Minimum Height of Figures, Words, and Symbols. – If the indications are displayed in the vehicle, the minimum height of the figures used to indicate the fare shall be 10 mm and for extras, 8 mm. The minimum height of the figures, words, or symbols used for other indications, including those used to identify or define, shall be 3.5 mm.

S.1.5.2. Lighting of Indications. – If the indications are displayed in the vehicle, integral lighting shall be provided to illuminate the fare and extras.

S.1.5.3. Supplemental Indications. – If a supplementary indicating element is installed in a vehicle to provide information regarding the service to the passenger, it shall clearly display the current total of all charges incurred for the transaction. The accruing total of all charges must remain clearly visible on the passenger’s display unless disabled by the passenger at all times during the transaction.

S.1.5.3.1. Fare and extras charges – The indication of fare and extras charges on the indicating element shall agree with similar indications displayed on all other indicating elements in the system.

S.1.6. Actuation of Fare-Indicating System. – A system shall be designed to calculate fares upon the basis of a combination of distance traveled and time elapsed.

S.1.7. Operating Condition.

S.1.7.1. Fare Identification. – Fare indications shall be identified by the word “Fare” or by an equivalent expression. Values shall be defined by suitable words or monetary signs.

S.1.7.2. Extras. – Extras shall be indicated as a separate item and shall not be included in the fare indication. They shall be identified by the word “Extras” or by an equivalent expression. Values shall be defined by suitable words or monetary signs. Means may be provided to totalize the fare and extras if the totalized amount returns to separate indications of fare and extras within 5 seconds or less.

S.1.7.2.1. Nonuse of Extras. – If and when system extras are prohibited by a legal authority or are discontinued by a vehicle operator, the extras mechanisms shall be rendered inoperable or the extras indications shall be effectively obscured by permanent means.

S.1.8. Protection of Indications. – All indications of fare and extras shall be protected from unauthorized alteration or manipulation.

S.1.9. Recorded Representation. – A receipt issued from a system, whether through an integral or separate recording element, shall include the following:

(a) date;

(b) unique vehicle identification number, or other identifying information as specified by the statutory authority;

(c) start and end time of trip, and total time of trip, maximum increment of one second;

(d) distance traveled, maximum increment of 0.01 kilometer or 0.01 mile;

(e) the associated fare in \$ at each rate;

(f) additional charges where permitted such as extras; and

(g) total fare in \$ (total charge).

S.2. Basis of Fare Calculations. – A system may calculate fares upon the basis of:

(a) distance traveled;

(b) time elapsed; or

(c) a combination of distance traveled and time elapsed.

S.3. Interference. – For systems that determine distance and time separately there shall be no interference between the time and the distance portions of the mechanism device at any speed of operation.

S.4. Provision for Sealing.

S.4.1. System Security. – A system shall be designed with provisions to ensure that no change can be made that detrimentally affects its metrological integrity.

S.4.2. Changelog. – The system shall provide a changelog, with the information available electronically to the weights and measures official. The changelog shall include a chronological record of all changes affecting the metrological integrity of the system.

S.4.3. Software Authenticity. Technical means shall be employed to guarantee the authenticity of the loaded software, to ensure that it originates from the owner of the type approval certificate.

S.5. Provisions for Power Loss.

S.5.1. Transaction Information. – In the event of a power loss, the system shall be capable of determining the information needed to complete any transaction in progress at the time of the power loss.

N. Notes

N.1. Distance Tests.

N.1.1. Test Methods. – To determine compliance with distance tolerances, a distance test of a system shall be conducted utilizing a distance test or a transfer standard test where applicable.

(a) Specific Distance Test. – The test consists of operating the conveyance over a precisely measured course at least one mile in length.

(b) Transfer Standard Test. - When comparing a system with a calibrated transfer standard, the distance shall be equal to at least the distance traveled on the specific distance test.

N.1.2. Test Procedures. - Not less than two test runs shall be conducted for a distance test and shall be at a speed approximating the average speed traveled by the vehicle in normal service.

N.1.3. Test Conditions. – Tests shall be conducted under conditions that are usual and customary with respect to the location and use of the device.

N.2. Time Test. – A system equipped with a timing device shall be tested during the specific distance and transfer standard tests.

N.3. Isolation Test. – If a system is designed to calculate fares for time and distance separately, tests for time and distance shall be conducted independently.

N.4. Software Tests. – The system software shall be loaded onto a smartphone and tested for authenticity and version number.

T. Tolerances

T.1. Tolerance Values.

T.1.1. Distance Tests. – Maintenance and acceptance tolerances shall be as follows:

(a) On Overregistration: 1 %

(b) On Underregistration: 4 %

T.1.2. Time Tests. – Maintenance and acceptance tolerances shall be as follows:

(a) On Overregistration: 5 seconds per test

(b) On Underregistration: 5 seconds per test

Background/Discussion: See Appendix A, Page S&T-A111.

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| NEWMA Action: Item 354-6 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| The submitter states that this item will be withdrawn and replaced via a new form 15 in the fall of 2016. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input checked="" type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| Submitter will withdraw this item. |

| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
|--|
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input checked="" type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| On the recommendation of the submitter, this item will be withdrawn and be forwarded to NCWM. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

358 MULTIPLE DIMENSION MEASURING DEVICES

358-1 V Table S.4.1.a. Marking Requirements for Multiple Dimension Measuring Systems, Table S.4.1.b. Multiple Dimension Measuring Systems Notes for Table S.4.1.a.

Source:

NTEP Multiple Dimension Measuring Device Work Group (MDMD) (2016)

Purpose:

Create a new specification in the Multiple Dimensioning Measuring Device Code to require that the measurement result of all axes being displayed, printed or recorded in the same unit of measure.

Item under Consideration:

Amend NIST Handbook 44, Multiple Dimension Measuring Devices Code as follows:

S.1.5. Value of Dimension /Volume Division Units. – The value of a device division “d” expressed in a unit of dimension shall be presented in a decimal format. **The value of “d” for each measurement axis shall be in the same unit of measure and with the value of the division** expressed as:

...

Background/Discussion: See Appendix A, Page S&T-A116.

| |
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| NEWMA Action: Item 358-1 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| The SMA supports this item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda |

| |
|--|
| <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: The committee feels this item is ready for a vote. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (<i>If different than regional committee recommendation</i>) |
| Regional recommendation to NCWM for item status: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA recommends this item be forwarded to NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

358-2 V Table S.4.1.a. Marking Requirements for Multiple Dimension Measuring Systems, Table S.4.1.b. Multiple Dimension Measuring Systems Notes for Table S.4.1.a.

Source:

NTEP Multiple Dimension Measuring Device Work Group (MDMD) (2016)

Purpose:

Provide requirements pertaining to the use of multi-intervals on an MDMD.

Item under Consideration:

Amend NIST Handbook 44, Multiple Dimension Measuring Devices Code as follows:

Modify NIST Handbook-44 Table S.4.1.b. to add a note 9 which reads ⁹ **This marking information may be provided by a display or accompanying document. If an accompanying document is provided, the accompanying document shall include the manufacturers name and model designation.**

A reference to note 9 to be added to the following marking requirements listed in Table S.4.1.a.: Minimum and Maximum Dimensions for Each Axis, Value of Measuring Division, d (for...), Temperature Limits, Minimum & Maximum Speed, Special Application, and Limitation of Use.

| |
|---|
| <p>Table S.4.1.a.</p> <p>Marking Requirements for Multiple Dimension Measuring System</p> |
|---|

| To Be Marked With | Multiple Dimension Measuring Equipment | | | |
|--|---|---|---|---------------------|
| | Multiple Dimensions Measuring Device and Indicating Element in Same Housing | Indicating Element Not Permanently Attached to Multiple Dimension Measuring Element | Multiple Dimension Measuring Element not Permanently Attached to the Indicating Element | Other Equipment (1) |
| Manufacturer's ID | X | X | X | X |
| Model Designation | X | X | X | X |
| Serial Number and Prefix | X | X | X | X (2) |
| Certificate of Conformance Number (8) | X | X | X | X (8) |
| Minimum and Maximum Dimensions for Each Axis (3)(9) | X | X | X | |
| Value of Measuring Division, d (for each axis and range) (9) | X | X | X | |
| Temperature Limits (4)(9) | X | X | X | |
| Minimum and Maximum Speed (5)(9) | X | X | X | |
| Special Application (6)(9) | X | X | X | |
| Limitation of Use (7)(9) | X | X | X | |

| Table S.4.1.b. Multiple Dimension Measuring Systems Notes for Table S.4.a. |
|--|
| 1. Necessary to the dimension and/or volume measuring system, but having no effect on the measuring value (e.g., auxiliary remote display, keyboard, etc.) |
| 2. Modules without "intelligence" on a modular system (e.g., printer, keyboard module, etc.) are not required |

to have serial numbers.

3. The minimum and maximum dimensions and measuring division (using upper and lower case type) shall be marked. For example:

Length: min ___ max ___ d ___

Width: min ___ max ___ d ___

Height: min ___ max ___ d ___

4. Required if the range is other than -10 °C to 40 °C (14 °F to 104 °F.)

5. Multiple dimension measuring devices, which require that the object or device be moved relative to one another, shall be marked with the minimum and maximum speeds at which the device is capable of making measurements that are within the applicable tolerances.

6. A device designed for a special application rather than general use shall be conspicuously marked with suitable words visible to the operator and the customer restricting its use to that application.

7. Materials, shapes, structures, combination of object dimensions, speed, spacing, minimum protrusion size, or object orientations that are inappropriate for the device or those that are appropriate.

8. Required only if a Certificate of Conformance has been issued for the equipment.

9. **This marking information may be provided by a display or accompanying document. If an accompanying document is provided, the accompanying document shall include the manufacturers name and model designation.**

Background/Discussion: See Appendix A, Page S&T-A117.

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| NEWMA Action: Item 358-2 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| The SMA supports this item |
| Item as proposed by the regional committee: (If different than agenda item) |
| |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee feels this item is ready for a vote. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |

Regional Report to NCWM:

Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. **This will replace any previous reports from your region on this item.**

NEWMA recommends this item be forwarded to NCWM as a Voting item.

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

358-3 V S.2.2.1. Maximum Value of Tare for Multi-Interval (Variable Division Value) Devices. S.2.2.2. Net Values, Mathematical Agreement, Table 1: Examples of Acceptable Altering of Tare to Achieve Accurate Net Indication, Table 2: Examples of Acceptable Rounding of the Net Result (Following the Subtraction of Tare) to Achieve Accurate Net Indication, Table S.4.1.a., Marking Requirements for Multiple Dimension Measuring Systems, T.2.3. Multi-interval (Variable Division-Value) Devices., T.2.4. Mixed-interval Devices.

Source:

NTEP Multiple Dimension Measuring Device Work Group (MDMD) (2016)

Purpose:

Provide requirements pertaining to the use of multi-intervals on an MDMD.

Item under Consideration:

Amend NIST Handbook 44, Multiple Dimension Measuring Devices Code as follows:

Add new sub-paragraphs S.2.2.1. Maximum Value of Tare for Multi-Interval (Variable Division- Value) Devices and S.2.2.2. Net Values, Mathematical Agreement beneath existing paragraph S.2.2. Tare as follows:

S.2.2. Tare. – The tare function...

S.2.2.1. Maximum Value of Tare for Multi-Interval (Variable Division-Value) Devices. – A multi-interval device shall not accept any tare value greater than the maximum capacity of the lowest range of the axis for which the tare is being entered.

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.

The following example (of a multi-interval device having two partial measuring ranges for the “x” axis) and accompanying two tables are provided to further clarify the two acceptable methods a device can use to achieve mathematical agreement when tare has been entered in a lower partial measuring range than the gross indication:

Example 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

Table 1: Examples of Acceptable Altering of Tare to Achieve Accurate Net Indication

| <u>Gross Indication of Item Being Measured</u> | <u>Tare Entered</u> | <u>Value of Tare after Being Altered by the Device</u> | <u>Acceptable Net Indication</u> |
|--|---------------------|--|----------------------------------|
| <u>154.5 inches</u> | <u>41.2 inches</u> | <u>41.0 inches</u> | <u>113.5 inches</u> |
| <u>154.5 inches</u> | <u>41.4 inches</u> | <u>41.5 inches</u> | <u>113.0 inches</u> |

Table 2: Examples of Acceptable Rounding of the Net Result (Following the Subtraction of Tare) to Achieve Accurate Net Indication

| <u>Gross Indication of Item Being Measured</u> | <u>Tare Entered</u> | <u>Net Result Before Rounding (Gross Indication minus Tare Entered)</u> | <u>Acceptable Net Indication Rounded to Nearest 0.5 inch</u> |
|--|---------------------|---|--|
| <u>154.5 inches</u> | <u>41.2 inches</u> | <u>113.3 inches</u> | <u>113.5 inches</u> |
| <u>154.5 inches</u> | <u>41.4 inches</u> | <u>113.1 inches</u> | <u>113.0 inches</u> |

Amend Table S.4.1.a. Marking Requirements for Multiple Dimension Measuring Equipment as follows:

| Table S.4.1.a. Marking Requirements for Multiple Dimension Measuring Systems | | | | |
|---|---|--|--|--------------------------------|
| To Be Marked With ∴ | Multiple Dimension Measuring Equipment | | | |
| | Multiple Dimension Measuring Device and Indicating Element in Same Housing | Indicating Element not Permanently Attached to Multiple Dimension Measuring Element | Multiple Dimension Measuring Element not Permanently Attached to the Indicating Element | Other Equipment (1) |
| Manufacturer's ID | x | x | x | x |
| Model Designation | x | x | x | x |
| Serial Number and Prefix | x | x | x | x (2) |
| Certificate of Conformance Number (8) | x | x | x | x (8) |
| Minimum and Maximum Dimensions for Each Axis for Each Range in Each Axis (3) | x | x | x | |
| Value of Measuring Division, d (for each axis and range) | x | x | x | |
| Temperature Limits (4) | x | x | x | |
| Minimum & Maximum speed (5) | x | x | x | |
| Special Application (6) | x | x | x | |
| Limitation of Use | x | x | x | |

| | | | |
|-----|--|--|--|
| (7) | | | |
|-----|--|--|--|

Amend paragraph T.2.3. Multi-Interval (Variable Division-Value) Devices and add a new paragraph T.2.4. Mixed-interval Devices. as follows:

T.2.3. Multi-interval (Variable Division-Value) Devices. – ~~For multi-interval (variable division-value) devices,~~ When there exists two or more partial measuring ranges (or segments) specified for any of the “dimensioning” axes (length (x), width (y), or height (z)) and the division values corresponding to those partial measuring ranges (or segments) within the same “dimensioning” axis differ, the tolerance values are shall be based on the value of the ~~device~~ division of the range in use.

T.2.4. Mixed-interval Devices. - For devices that measure to a different division value in at least one dimensioning axes and all axes are single range, the tolerance values shall be based on the value of the division of the axis in use.

Background/Discussion: See Appendix A, Page S&T-A118.

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| NEWMA Action: Item 358-3 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| The SMA supports this item. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The committee feels this item is ready for a vote. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the “Additional Comments” section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region’s considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA recommends this item be forwarded to NCWM as a Voting item. |

Additional letters, presentations and data may have been part of the committee’s consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

360 OTHER ITEMS

360-1 D Electric Watthour Meters Code under Development

Source:

NIST OWM (2016)

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 watthour 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 USWNG 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 watthour 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 USWNG 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 2016-2107 NCWM cycle.

The USNWG will provide regular updates on the progress of this work and welcomes input from the community.

For additional information, contact USNWG Chairman Tina Butcher at tbutcher@nist.gov or 301-975-2196 or Technical Advisor, Juana Williams at Juana.williams@nist.gov or 301-975-3989

Background/Discussion: See Appendix A, Page S&T-A122.

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| NEWMA Action: Item 360-1 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| A comment was made that the Electric Watthour Meters Code has been slow to develop but the need for the code is not widespread throughout country at this time. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The USNWG development of this item is ongoing. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: |
| Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA recommends this item be forwarded to NCWM as a Developing item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

360-2 W Appendix A – Fundamental Considerations, 2.1. Acceptance and Maintenance Tolerances

Source:

Ross Andersen, Retired (2016)

Purpose:

Amend Section 2.1 of Fundamental Considerations to make it more effectively explain the purpose and application of HB44 tolerances.

Item under Consideration:

Amend NIST Handbook 44 Appendix A, Fundamental Considerations as follows:

~~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, 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.~~

2.1. Equipment Tolerances. – The official tolerances prescribed by a weights and measures jurisdiction for commercial equipment are the limits of inaccuracy officially permissible within that jurisdiction. These limits are set by means of tolerances which are codified to fix the range of inaccuracy within which equipment will be approved for commercial use when undergoing official tests. Alternatively, equipment that is performing outside these tolerance limits will be rejected and removed from service.

Regulatory decisions, to either approve or reject equipment, come with risks. Measurements are imperfect; meaning measurement without error is unattainable. All measurements involve rounding to the chosen increment of scale, all are subject to random variations, and all are affected by influences, disturbances, biases, and drift. This applies equally to the measurements being made by the commercial equipment, and to the official measurements made to verify that equipment. With these unavoidable uncertainties in the measurements, it is possible, and in fact likely, that compliant equipment will sometimes be rejected and non-compliant equipment will sometimes be approved. The regulatory approach used in this handbook recognizes the risks, attempts to limit the risks to reasonable levels, and, most importantly, balances the risks between buyer and seller. The approach has three primary concerns: accurate official standards, uniform test procedures, and limited equipment variability.

Accurate Official Standards – Each of the specific codes in the handbook prescribes the appropriate verification standards for official testing. The error in the verification standards is limited by a separate set of tolerances that are smaller than the tolerances applied to the equipment under test. These tolerances (see Part 3 of this Appendix) limit the biases imparted to the test directly from any error or bias inherent in the standards. However, these tolerances for the standards do not address the effects of influences, disturbances and drift on the standards when used in official testing.

Uniform Test Procedures - Each of the specific codes in this handbook prescribes uniform test procedures in the Notes section for various types of commercial equipment. These procedures evaluate equipment performance under varying operating conditions consistent with normal usage. The official performing the tests should ensure the procedures are followed meticulously so as to minimize the variability from these procedural sources. Although the procedures may be performed correctly, it is not possible to eliminate the effects of random variations, influences, disturbances, and biases from the procedures.

Limited Equipment Variability – Each of the specific codes in this handbook recognizes a reasonable amount of variability normally expected for each type of commercial equipment and the unique commodities or services measured. The equipment is subject to the effects of random variations, influences, disturbances, biases, and drift. In addition, the commodities and services are variables, as their properties affect how they are measured by the equipment.

Any official test result includes the variability from all three of the sources described above. When dealing with this variability, however, it is not practical to evaluate testing uncertainties for each inspector and each individual piece of equipment. The costs would be enormous to the regulatory agencies. Instead, the regulatory approach used in this Handbook is to view the process in terms of the tests on the entire population rather than on the single piece of equipment. In this context, the variability of the combined measurement is not a simple sum of the three parts, but rather a combination based on probabilities. We can express those probabilities using standard deviations (sd) for each of the terms. If we use S for standards, P for procedures and E for equipment, then we can express the total variation of the system using the formula below.

$$\text{Total Variability} = \sqrt{(\text{sd}^2\text{S} + \text{sd}^2\text{P} + \text{sd}^2\text{E})}$$

Essentially the prescribed tolerance limit is a formal cap to equipment variability including variation from all sources in the verification, i.e. variability in the standards and in the performance of prescribed test procedures. (See General Code G-S.5.4.) If the variability of the standards and the test procedure are small relative to that of the equipment, their impact on the total variability can be shown to be relatively small. Thus the equipment variability emerges as the primary source of the variation within the population. Measurement science confirms that measurement performance behaves normally, producing a population that has probabilities approximating a bell-shaped curve. It is critical to understand that the probabilities of false rejection and false acceptance are equal under this approach and the risks are equally distributed between buyers and sellers. The tolerance limits serve to identify individual pieces of equipment in the tails of the bell that should be rejected and then adjusted back to the middle of the population. Examples of the impacts of various levels of variability for the three components are shown in the table below.

| <u>sd Equipment</u> | <u>sd Standards</u> | <u>sd Procedures</u> | <u>sd Total Variability</u> | <u>*Contribution of Equipment %</u> |
|---------------------|---------------------|----------------------|-----------------------------|-------------------------------------|
| <u>1</u> | <u>1/3</u> | <u>1/3</u> | <u>1.106</u> | <u>90</u> |
| <u>1</u> | <u>1/4</u> | <u>1/4</u> | <u>1.061</u> | <u>94</u> |
| <u>1</u> | <u>1/5</u> | <u>1/5</u> | <u>1.039</u> | <u>96</u> |
| <u>1</u> | <u>1/10</u> | <u>1/10</u> | <u>1.010</u> | <u>99</u> |

Contribution of Equipment% is calculated as sd Equipment/sd Total Variability*100

The general rule for tolerance application pertains to equipment that is adjustable. It employs two levels of tolerances, acceptance tolerances and maintenance tolerances, where acceptance tolerance values are generally one-half the value of maintenance tolerances. These tolerances are applied based on a timeline. The timeline begins when the equipment is initially placed in service and ends when the equipment is either officially rejected, undergoes a major reconditioning or overhaul, or is decommissioned by the user.

A) Tolerances when placed in service: Equipment is tested when it is initially placed in service. Based on the test result(s), it is adjusted to bring performance error(s) as close as practicable to zero error. In addition, all errors must be within the acceptance tolerances. (See General Code Paragraphs G-UR.4.3. and G-T.1.) However, when making any adjustment it is not possible to know the impacts of the random variations, influences, disturbances, and biases on the measurements at that moment. By adjusting as close as practicable to zero error, there is a balanced risk of introducing bias in the equipment to either overregister or underregister (but still perform within the acceptance tolerance). Thus, over the entire population of equipment, the adjustments result in equipment performance that is bunched close to zero error and a population that is not skewed in favor of either buyer or seller.

B) Tolerances on official tests made within the first 30 days after placement in service: In the first 30 days after adjustment, acceptance tolerances are applied to any official tests of the equipment. Over a 30 day period after adjustment, the range of influences is expected to be small and there should be minimal drift in the equipment, thus the smaller acceptance tolerances are deemed appropriate.

C) Tolerances on official tests made 31 or more days after placement in service: For any official test after the first 30 days in service, maintenance tolerances are applied. This larger tolerance recognizes the

effects of a full range of influences and allows for small amounts of drift before the equipment will be officially rejected and require readjustment, repair, or major reconditioning or overhaul. Provided performance is maintained within the maintenance tolerances, the equipment can remain in service indefinitely. However, any out-of-tolerance performance in an official test is grounds for rejection and this creates a new timeline starting again at placement in service.

The special rule for tolerance application pertains to devices that are not adjustable, like steel tapes, timing devices, glass graduates, and measure-containers. For these devices the specific code prescribes only a single level of tolerances that are applied in all official tests of the equipment. These tolerances are applicable at all times the device is in service.

Background/Discussion: See Appendix A, Page S&T-A122.

Additional letters, presentations and data may have been part of the committee’s consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

360-3 V Appendix D – Definitions: Batching System (See Related Item 320-1)

Source:

Richard Suiter Consulting (2016)

Purpose:

Add a definition to NIST Handbook 44 Appendix D for batching systems..

Item under Consideration:

Amend NIST Handbook 44 Appendix D, Definitions as follows:

batching system. – One in which materials are measured in pre-determined quantities by weight and/or liquid measure. 2.20

Background/Discussion: See Appendix A, Page S&T-A125.

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| NEWMA Action: Item 360-3 |
| Summary of comments considered by the regional committee (in writing or during the open hearings): |
| OWM noted that the term “batching system” does not appear in Scales Code of HB44 and therefore it would be inappropriate to include a definition in HB 44 with a reference to that code. Another comment was heard that it needs further development and clarification. OWM states that the term needs to appear in the scales code before it can be defined. |
| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: |
| <input type="checkbox"/> Voting Item on the NCWM Agenda <input checked="" type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: |
| The term does not appear in the scales code and therefore cannot be added to the definitions at this time. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
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| <p>Regional recommendation to NCWM for item status:</p> <p><input type="checkbox"/> Voting Item on the NCWM Agenda</p> <p><input checked="" type="checkbox"/> Information Item on the NCWM Agenda</p> <p><input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>)</p> <p><input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>)</p> <p><input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>)</p> |
| <p>Regional Report to NCWM:</p> <p>Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item.</p> |
| <p>NEWMA cannot recommend this item as voting with the need for clarification, Item 320-1 was withdrawn and it was commented that there is no benefit to adding a definition unless this item was adopted. NEWMA recommends that it be an Information Item to see how it can be defined.</p> |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

360-4 V Appendix D – Definitions: calibration parameter

Source:

NCWM Multi-Point Calibration Group (MPCG) (2015)

Purpose:

Update the definitions in Appendix D to reflect advances in device calibration technology.

Item under Consideration:

Amend NIST Handbook 44 Appendix D – Definitions as follows:

calibration parameter. – Any adjustable parameter that can affect measurement or performance accuracy and, due to its nature, needs to be updated on an ongoing basis to maintain device accuracy, e.g., span adjustments, linearization factors, and coarse zero adjustments.[2.20, 2.21, 2.24, 3.30, 3.31, 3.32, 3.34, 3.35, 3.37, 3.38, 3.39, 5.56(a), and 5.58]

Background/Discussion: See Appendix A, Page S&T-A126.

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| NEWMA Action: Item 360-4 |
| <p>Summary of comments considered by the regional committee (in writing or during the open hearings):</p> <p>OWM states this item only adds additional code references to the existing bracketed code references appearing beneath the definition of "calibration parameter" in Appendix D of HB 44.</p> |
| <p>Item as proposed by the regional committee: (If different than agenda item)</p> |
| <p>Committee recommendation to the region:</p> <p><input checked="" type="checkbox"/> Voting Item on the NCWM Agenda</p> <p><input type="checkbox"/> Information Item on the NCWM Agenda</p> <p><input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>)</p> <p><input type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>)</p> |
| <p>Reasons for the committee recommendation:</p> <p>The committee feels this add the definition to the term already being used in HB44.</p> |

| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
|--|
| Final updated or revised proposal from the region: <i>(If different than regional committee recommendation)</i> |
| Regional recommendation to NCWM for item status: <input checked="" type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda <i>(In the case of new items, do not forward to NCWM)</i> <input type="checkbox"/> Developing Item on the NCWM Agenda <i>(To be developed by source)</i> <input type="checkbox"/> Unable to consider at this time <i>(Provide explanation in the "Additional Comments" section below)</i> |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA will forward this item to NCWM and recommend it be a Voting item. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

360-5 D Appendix D – Definitions: Remote Configuration Capability

Source:

NTEP Grain Analyzer Sector (2013)

Purpose:

Expand the scope of definition to cover instances where the "other device," as noted in the current definition, may be necessary to the operation of the weighing or measuring device or which may be considered a permanent part of that device.

Item Under Consideration:

This item is under development. Comments and inquiries may be directed to NIST Office of Weights and Measures.

A proposal to modify the definition for "remote configuration capability" as follows is under consideration:

remote configuration capability. – The ability to adjust a weighing or measuring device or change its sealable parameters from or through some other device that ~~is not~~ **may or may not** itself **be** necessary to the operation of the weighing or measuring device or ~~is not~~ **may or may not be** a permanent part of that device.[2.20, 2.21, 2.24, 3.30, 3.37, 5.56(a)]

(Added 1993, Amended 20XX)

Background/Discussion: See Appendix A, Page S&T-A127.

| NEWMA Action: Item 360-5 |
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| Summary of comments considered by the regional committee (in writing or during the open hearings): SMA opposes; the concern about changing sealable parameters without proper reseal. OWM reported that members of its legal metrology devices program (LMDP) are still developing the item and asked that it remain developing to allow time for that work to be completed. OWM noted that the LMDP had already developed a draft General code requirement and had received feedback on that draft and that work was ongoing. |

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| Item as proposed by the regional committee: (If different than agenda item) |
| Committee recommendation to the region: <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) |
| Reasons for the committee recommendation: OWM states this item is still being worked on. |
| COMPLETE SECTION BELOW FOLLOWING VOTING SESSION |
| Final updated or revised proposal from the region: (If different than regional committee recommendation) |
| Regional recommendation to NCWM for item status: <input type="checkbox"/> Voting Item on the NCWM Agenda <input type="checkbox"/> Information Item on the NCWM Agenda <input type="checkbox"/> Withdraw the Item from the NCWM Agenda (<i>In the case of new items, do not forward to NCWM</i>) <input checked="" type="checkbox"/> Developing Item on the NCWM Agenda (<i>To be developed by source</i>) <input type="checkbox"/> Unable to consider at this time (<i>Provide explanation in the "Additional Comments" section below</i>) |
| Regional Report to NCWM: Please provide your report in this section exactly how you want it to appear in the NCWM reports to represent your region's considerations, support or opposition, and recommendations. This will replace any previous reports from your region on this item. |
| NEWMA will forward this item to NCWM as a Developing item as a way of OWM ensuring the changes are accountable. |

Additional letters, presentations and data may have been part of the committee's consideration. Please refer to <http://www.ncwm.net/meetings/interim/publication-15> to review these documents.

Ms. Jane Zulkiewicz, Town of Barnstable, MA | Committee Chair
Mr. Bradford Bachelder, Maine | Member
Mr. Jim McEnerney, Connecticut | Member

Specifications and Tolerances Committee