

NEWMA Specifications and Tolerances (S&T) Committee 2017 Interim Meeting Report

Brad Bachelder, Committee Chair
Maine

3000 INTRODUCTION

The Specifications and Tolerances (S&T) Committee (hereinafter referred to as “Committee”) submits its Report to the Northeastern Weights and Measures Association (NEWMA). The Report consists of the NEWMA Agenda (NCWM Carryover and NEW items) and this Addendum. Page numbers in the tables below refer to pages in this Addendum. Suggested revisions to the handbook 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**.

Presented below is a list of agenda items considered by the NEWMA and its recommendations to the NCWM Specifications and Tolerances Committee.

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Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
ABWS	Automatic Bulk Weighing System	NEWMA	Northeastern Weights and Measures Association
AAR	Association of American Railroads	NIST	National Institute of Standards and Technology
API	American Petroleum Institute	NTEP	National Type Evaluation Program
CNG	Compressed Natural Gas	OIML	International Organization of Legal Metrology
CWMA	Central Weights and Measures Association	OWM	Office of Weights and Measures
EPO	Examination Procedure Outline	RMFD	Retail Motor Fuel Dispenser
FHWA	Federal Highway Administration	S&T	Specifications and Tolerances
GMM	Grain Moisture Meter	SD	Secure Digital
GPS	Global Positioning System	SI	International System of Units
HB	Handbook	SMA	Scale Manufacturers Association
LMD	Liquid Measuring Devices	SWMA	Southern Weights and Measures Association
LNG	Liquefied Natural Gas	TC	Technical Committee
LPG	Liquefied Petroleum Gas	USNWG	U.S. National Work Group
MMA	Meter Manufacturers Association	VTM	Vehicle Tank Meter
MDMD	Multiple Dimension Measuring Device	WIM	Weigh-in-Motion
NCWM	National Conference on Weights and Measures	WWMA	Western Weights and Measures Association

Details of All Items
(In order by Reference Key)

3100 – GENERAL CODE**New 21 G-A.1. Commercial and Law-Enforcement Equipment. and G-S.2. Facilitation of Fraud.****Source:**

Arizona, Florida, Maine, Michigan and Cambridge, Massachusetts (2018)

Purpose:

To prevent access and tampering by unauthorized persons to any area of the device where electronic financial transactions occur, credit card information is obtained, and or personal information is stored or transmitted.

Item under Consideration:

Amend NIST Handbook 44 General Code as follows:

G-A.1. Commercial and Law-Enforcement Equipment. – These specifications, tolerances, and other technical requirements apply as follows:

(a) To commercial weighing and measuring equipment; that is, to weights and measures and weighing and measuring devices commercially used or employed in establishing the size, quantity, extent, area, composition (limited to meat and poultry), constituent values (limited to grain), or measurement of quantities, things, produce, or articles for distribution or consumption, purchased, offered, or submitted for sale, hire, or award, or in computing any basic charge or payment for services rendered on the basis of weight or measure.

(Amended 2008)

(b) To any accessory attached to or used in connection with a commercial weighing or measuring device when such accessory is so designed that its operation affects the accuracy **or can be used to defraud or collect unauthorized personal or financial information from the user** of the device.

(c) To weighing and measuring equipment in official use for the enforcement of law or for the collection of statistical information by government agencies.

G-S.2. Facilitation of Fraud. – All equipment and all mechanisms, software, and devices attached to or used in conjunction therewith shall be so designed, constructed, assembled, and installed for use such that they do not facilitate the perpetration of fraud. **Any device capable of customer initiated electronic financial transactions shall incorporate an event counter that records date and time of access and must be of such design and construction to substantially restrict access and tampering by unauthorized persons to any area of the device where financial transactions occur, credit card information is obtained, and or personal information is stored or transmitted. Restriction of access and tampering may be accomplished by;**

(a) Electronic alarming or disabling of the equipment if unauthorized access is gained or,

(b) Physical means that cannot be breached without causing visible damage to the exterior of the device. Such physical means shall not include the use of a universal key, master key or security device that can be manipulated with universal tools.

(Amended 2007 and 20XX)

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

NEWMA Report
Regional recommendation to NCWM on item status: <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>) Mike Sikula (New York State) supports but concerned about the restriction of access to prevent criminals from planting skimming devices will also prevent inspectors from easily accessing devices. Frank Green (Connecticut) added his concern to make sure access is still possible for W&M. Eric Golden (Cardinal Scales) question of what lock is good enough in this situation. Walt R Emmert (Pennsylvania) suggests more people in the discussion to standardize the situation by protecting and granting access to W&M. Steve Giguere (Maine, submitter) was put into general code on purpose to encompass all devices. Ross Andersen (Retired, NY) comments what authority do we have for this. Facilitation of fraud vs fraud itself. Mike Sikula made a comment that he interpreted G-A.1. (b) that as written it made W&M officials responsible for the fraud investigation. The committee believes the submitters have developed the item and it should move forward as a committee owned Informational item.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-29 G-S.2. Facilitation of Fraud. (See related item New-30)

Source:
New York (2018)

Purpose:
Provide specifications and user requirements for manifold flush systems. Recognize that there is a balance between a mechanism that provides an important safety benefit but also, if used incorrectly, facilitates fraud. Ensure that VTM owners understand their responsibilities when installing such a system and ensure uniformity in enforcement throughout the country.

Item under Consideration:
Amend NIST Handbook 44 General Code as follows:

G-S.2. Facilitation of Fraud. – All equipment and all mechanisms, software, and devices attached to or used in conjunction therewith shall be so designed, constructed, assembled, and installed for use such that they do not facilitate the perpetration of fraud. **Where such equipment and/or mechanism will be installed for safety purposes, the device owner must petition, in writing, the weights and measures authority having jurisdiction over the device for a waiver from this specification.**
(Amended 2007 and 20XX)

Background/Discussion: See Appendix A, Page S&T-A7.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>) </p>
<p>Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>)</p> <p>The meeting received a presentation from the submitter on this item. This item has been fully developed by the submitter and the committee believes it should move forward as an Informational item.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3100-1 D G-S.5.2.2. Digital Indication and Representation (See related items 3200-5 and 3600-2)

Source:

Ross Andersen, Retired (2017)

Purpose:

Address application of the code requirements across multiple devices.

Item under Consideration:

Amend NIST Handbook 44 General Code as follows:

G-S.5.2.2. Digital Indication and Representation. – Digital elements shall be so designed that:

- (a) All digital values of like value in a system agree with one another.
- (b) A digital value coincides with its associated analog value to the nearest minimum graduation.
- (c) A digital value “rounds off” to the nearest minimum unit that can be indicated or recorded.
- (d) *A digital zero indication includes the display of a zero for all places that are displayed to the right of the decimal point and at least one place to the left. When no decimal values are displayed, a zero shall be displayed for each place of the displayed scale division.*

[Nonretroactive as of January 1, 1986]

(e) A digital value that is electronically summed from the digital indications of multiple independent devices shall be mathematically correct.

[Nonretroactive as of January 1, 20XX]

(Amended 1973, and 1985, **and 20XX**)

Background/Discussion: See Appendix A, Page S&T-A7.

NEWMA Report
Regional recommendation to NCWM on item status: <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input checked="" type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>) This item is part of Batch 1 which includes 3100-1, 3200-5 and 3600-2. Ross Andersen (submitter) gave a presentation on the items. Eric Golden (SMA) commented that the SMA oppose recommends further development. Ross Anderson recommends that 3100-1 be withdrawn and that 3200-5 and 3600-2 be moved forward as developing items. The committee heard comments in support of this and moves that 3100-1 be Withdrawn while 3200-5 and 3600-2 are designated Developing.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3200 SCALES

3200-1 S.1.2. Value of Scale Division Units and Appendix D – Definitions: batching scale

Source:

Richard Suiter Consulting (2017)

Purpose:

Recognize batching systems as a device type in the scales code to help officials differentiate between them and automatic bulk weighing systems.

Item under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

S.1.2. Value of Scale Division Units. – Except for ~~batching scales and~~ weighing systems used exclusively for weighing in predetermined amounts, the value of a scale 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; or

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

(c) a binary submultiple of a specific unit of weight.

Examples: scale divisions may be 1/2, 1/4, 1/8, 1/16, etc.

[Nonretroactive as of January 1, 1986]

(Amended 20XX)

And add a new definition for the term “batching scale” into NIST Handbook 44, Appendix D – Definitions as follows:

batching scale. – Any scale which by design or construction, lends itself readily to use in proportioning ingredients by weight. 2.20

(Amended 20XX)

Background/Discussion: See Appendix A, Page S&T-A16.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input checked="" type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>The committee heard comments in support of withdrawing this item. This item is not found to have merit and is recommended to be Withdrawn.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-17 S.1.2.2.3. Deactivation of a “d” Resolution

Source:
NIST OWM (2018)

Purpose:
To ensure that a Class I or II scale with the capability of deactivating a “d” resolution continues to round properly when the “d” resolution is deactivated.

Item under Consideration:
Amend NIST Handbook 44, Scales Code as follows:

S.1.2.2.3. Deactivation of a “d” Resolution. - It shall not be possible to deactivate the “d” resolution on a Class I or II scale equipped with a value of “d” that differs from “e” if such action affects the scale’s ability to round digital values to the nearest minimum unit that can be indicated or recorded as required by paragraph G-S.5.2.2.
(Added 20XX)

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

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p>

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| <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda
<input checked="" type="checkbox"/> Recommend as an Information Item on the NCWM agenda
<input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>)
<input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>) |
|--|

Comments and justification for the regional recommendation to NCWM: (*This will appear in NCWM reports*)

Comments were heard on how to verify that the scale is meeting the code requirement on rounding properly. The believed method of test would require the use of 10 mg or 1 mg weights. This does not seem like a realistic field test. The committee feels that this has been developed by the submitter and further development should be done by the committee. This item has support as moving forward on the NCWM agenda as an Information item.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3200-3 S.1.8.5. Recorded Representations, Point of Sale Systems

Source:

Kansas and Minnesota (2017)

Purpose:

Provide verification to consumers through recorded representation that tare has been taken at point of sale for sales from bulk.

Item under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

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

(a) the net weight;¹

(b) the tare weight;¹

~~(c)~~ the unit price;¹

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

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

[Non-retroactive January 1, 2020]

(Amended 20XX)

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

[Nonretroactive as of January 1, 2006]

(Amended 1995 and 2005)

Background/Discussion: See Appendix A, Page S&T-A21.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>) </p>
<p>Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>)</p> <p>Eric Golden (SMA) commented that the SMA opposes this item. Comments were heard on the possible confusion it could lead to. Comments were heard on withdrawing the item. Lou Sakin (Mass) believed the item had merit and recommend voting. The committee recommends this item be moved forward as an Informational Item.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3200-4 D Table 3, Parameters for Accuracy Classes (See related item 3200-8)

Source:

Meridian Engineers Pty Ltd. (2017)

Purpose:

Reduce the required minimum scale division value for coupled-in-motion railroad weighing systems that are not used for static reference weighing.

Item under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

<i>Table 3. Parameters for Accuracy Classes</i>			
<i>Class</i>	<i>Value of the Verification Scale Division (d or e¹)</i>	<i>Number of Scale⁴ Divisions (n)</i>	
		<i>Minimum</i>	<i>Maximum</i>
<i>SI Units</i>			
<i>I</i>	<i>equal to or greater than 1 mg</i>	<i>50 000</i>	<i>--</i>
<i>II</i>	<i>1 to 50 mg, inclusive</i>	<i>100</i>	<i>100 000</i>
<i>III^{2,5}</i>	<i>equal to or greater than 100 mg</i>	<i>5 000</i>	<i>100 000</i>
<i>III^{2,5}</i>	<i>0.1 to 2 g, inclusive</i>	<i>100</i>	<i>10 000</i>
<i>III^{2,5}</i>	<i>equal to or greater than 5 g</i>	<i>500</i>	<i>10 000</i>
<i>III L³</i>	<i>equal to or greater than 2 kg</i>	<i>2 000</i>	<i>10 000</i>
<i>III</i>	<i>equal to or greater than 5 g</i>	<i>100</i>	<i>1 200</i>

<i>U.S. Customary Units</i>			
<i>III⁵</i>	<i>0.0002 lb to 0.005 lb, inclusive</i>	<i>100</i>	<i>10 000</i>
	<i>0.005 oz to 0.125 oz, inclusive</i>	<i>100</i>	<i>10 000</i>
	<i>equal to or greater than 0.01 lb</i>	<i>500</i>	<i>10 000</i>
	<i>equal to or greater than 0.25 oz</i>	<i>500</i>	<i>10 000</i>
<i>III L³</i>	<i>equal to or greater than 5 lb</i>	<i>2 000</i>	<i>10 000</i>
<i>III</i>	<i>greater than 0.01 lb</i>	<i>100</i>	<i>1 200</i>
	<i>greater than 0.25 oz</i>	<i>100</i>	<i>1 200</i>

¹ For Class I and II devices equipped with auxiliary reading means (i.e., a rider, a vernier, or a least significant decimal differentiated by size, shape, or color), the value of the verification scale division “e” is the value of the scale division immediately preceding the auxiliary means.

² A Class III scale marked “For prescription weighing only” may have a verification scale division (e) not less than 0.01 g.
(Added 1986) (Amended 2003)

³ The value of a scale division for crane and hopper (other than grain **hopper and coupled-in-motion railroad weighing systems (not used for static reference weighing)**) scales shall be not less than 0.2 kg (0.5 lb). The minimum number of scale divisions shall be not less than 1000.

⁴ On a multiple range or multi-interval scale, the number of divisions for each range independently shall not exceed the maximum specified for the accuracy class. The number of scale divisions, n, for each weighing range is determined by dividing the scale capacity for each range by the verification scale division, e, for each range. On a scale system with multiple load-receiving elements and multiple indications, each element considered shall not independently exceed the maximum specified for the accuracy class. If the system has a summing indicator, the n_{max} for the summed indication shall not exceed the maximum specified for the accuracy class.
(Added 1997)

⁵ The minimum number of scale divisions for a Class III Hopper Scale used for weighing grain shall be 2000.)

[Nonretroactive as of January 1, 1986]
(Amended 1986, 1987, 1997, 1998, 1999, 2003, ~~and-2004~~ **and 20XX**)

Background/Discussion: See Appendix A, Page S&T-A27.

NEWMA Report
Regional recommendation to NCWM on item status:
<input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>)
Mike Sikula (NY) suggested an editorial change of the word “hopper” in footnote 3 that it should not be bold as it is already in the HB. Eric Golden (SMA) the SMA opposes this item as an unnecessary change to the code. A

comment was heard that this item should be addressed in the test notes. The committee believes this item could be further developed by the submitter.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3200-5 D Table 3, Parameters for Accuracy Classes (See related items 3100-1 and 3600-2)

Source:

Ross Andersen, Retired (2017)

Purpose:

Address application of the code requirements across multiple devices.

Item under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

<i>Table 3. Parameters for Accuracy Classes</i>			
<i>Class</i>	<i>Value of the Verification Scale Division (d or e¹)</i>	<i>Number of Scale⁴ Divisions (n)</i>	
		<i>Minimum</i>	<i>Maximum</i>
<i>SI Units</i>			
<i>I</i>	<i>equal to or greater than 1 mg</i>	<i>50 000</i>	<i>--</i>
<i>II</i>	<i>1 to 50 mg, inclusive</i>	<i>100</i>	<i>100 000</i>
	<i>equal to or greater than 100 mg</i>	<i>5 000</i>	<i>100 000</i>
<i>III²⁻⁵</i>	<i>0.1 to 2 g, inclusive</i>	<i>100</i>	<i>10 000</i>
	<i>equal to or greater than 5 g</i>	<i>500</i>	<i>10 000</i>
<i>III L³</i>	<i>equal to or greater than 2 kg</i>	<i>2 000</i>	<i>10 000</i>
<i>III</i>	<i>equal to or greater than 5 g</i>	<i>100</i>	<i>1 200</i>
<i>U.S. Customary Units</i>			
<i>III⁵</i>	<i>0.0002 lb to 0.005 lb, inclusive</i>	<i>100</i>	<i>10 000</i>
	<i>0.005 oz to 0.125 oz, inclusive</i>	<i>100</i>	<i>10 000</i>
	<i>equal to or greater than 0.01 lb</i>	<i>500</i>	<i>10 000</i>
	<i>equal to or greater than 0.25 oz</i>	<i>500</i>	<i>10 000</i>
<i>III L³</i>	<i>equal to or greater than 5 lb</i>	<i>2 000</i>	<i>10 000</i>
<i>III</i>	<i>greater than 0.01 lb</i>	<i>100</i>	<i>1 200</i>
	<i>greater than 0.25 oz</i>	<i>100</i>	<i>1 200</i>

¹ For Class I and II devices equipped with auxiliary reading means (i.e., a rider, a vernier, or a least significant decimal differentiated by size, shape, or color), the value of the verification scale division “e” is the value of the scale division immediately preceding the auxiliary means.

² A Class III scale marked “For prescription weighing only” may have a verification scale division (e) not less than 0.01 g.

(Added 1986) (Amended 2003)

³ The value of a scale division for crane and hopper (other than grain hopper) scales shall be not less than 0.2 kg (0.5 lb). The minimum number of scale divisions shall be not less than 1000.

⁴ On a multiple range or multi-interval scale, the number of divisions for each range independently shall not exceed the maximum specified for the accuracy class. The number of scale divisions, n, for each weighing range is determined by dividing the scale capacity for each range by the verification scale division, e, for each range. ~~On a scale system with multiple load-receiving elements and multiple indications, each element considered shall not independently exceed the maximum specified for the accuracy class. If the system has a summing indicator, the n_{max} for the summed indication shall not exceed the maximum specified for the accuracy class.~~

(Added 1997, **Amended 20XX**)

⁵ The minimum number of scale divisions for a Class III Hopper Scale used for weighing grain shall be 2000.)

[Nonretroactive as of January 1, 1986]

(Amended 1986, 1987, 1997, 1998, 1999, 2003, and 2004)

Background/Discussion: See Appendix A, Page S&T-A29.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>This item is part of Batch 1 which includes 3100-1, 3200-5 and 3600-2. Ross Andersen (submitter) gave a presentation on the items. Eric Golden (SMA) commented that the SMA oppose recommends further development. Ross Anderson recommends that 3100-1 be withdrawn and that 3200-5 and 3600-2 be moved forward as developing items. The committee heard comments in support of this and moves that 3100-1 be Withdrawn while 3200-5 and 3600-2 are designated Developing.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-6 N.2. Verification (Testing) Standards (See related items New-7 through New-15)

Source:
NIST OWM (2018)

Purpose:
To remove the current limited definition and use of the term “Transfer Standard” and eliminate terms “Testing Standards”, “Verification (Testing) Standards”, and instead use the term Field Standard, consistent with its reference in Handbook 44, Appendix A, Fundamental Considerations and its use in several sections of Handbook 44. To correct the broad use of the term Transfer Standard and instead replace its use with the term Field Standard. To update all use of the term “standard” to use the term “Field Standard”. To remove the current limited definition of Transfer Standard and instead use the term Field Standard.

Item under Consideration:
Amend NIST Handbook 44, Scales Code as follows:

N.2. ~~Verification (Testing)~~ **Field** Standards. – Field standard weights used in verifying weighing devices shall comply with requirements of NIST Handbook 105-Series standards (or other suitable and designated standards) or the tolerances expressed in Fundamental Considerations, paragraph 3.2. (i.e., one-third of the smallest tolerance applied).
(Amended 1986 **and 20XX**)

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

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>This Item was included as part of Batch 2 which includes items New-6 through New-15. A comment was heard suggesting the definition could cause issues categorizing several field standards into transfer standards when this is not always the case. The intention is a nice idea but incorrect to say that everything we use in the field is a transfer standard. The committee believes this item has merit but requires further Development by the submitter.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3200-8 D T.N.3.6. Coupled-in-Motion Railroad Weighing Systems (See related item 3200-4)

Source:
Meridian Engineers Pty Ltd. (2017)

Purpose:
Align the acceptance tolerance values and assign accuracy classes for coupled-in-motion railroad weighing systems with OIML R 106-1 Edition 2011 (E) Automatic rail-weighbridges.

Item under Consideration:

Amend NIST Handbook 44, Scales Code as follows:

T.N.3.6. Coupled-In-Motion Railroad Weighing Systems. —~~The maintenance and acceptance tolerance values for the group of weight values appropriate to the application must satisfy the following conditions:~~

~~T.N.3.6.1. — For any group of weight values, the difference in the sum of the individual in-motion car weights of the group as compared to the sum of the individual static weights shall not exceed 0.2 %.~~

~~T.N.3.6.2. — If a weighing system is used to weigh trains of five or more cars, and if the individual car weights are used, any single weight value within the group must meet the following criteria:~~

~~(a) no single error may exceed three times the static maintenance tolerance;~~

~~(b) not more than 5 % of the errors may exceed two times the static maintenance tolerance; and~~

~~(c) not more than 35 % of the errors may exceed the static maintenance tolerance.~~

~~(Amended 1990 and 1992)~~

~~T.N.3.6.3. — For any group of weight values wherein the sole purpose is to determine the sum of the group, T.N.3.6.1. alone applies.~~

~~(Amended 1990)~~

~~T.N.3.6.4. — For a weighing system used to weigh trains of less than five cars, no single car weight within the group may exceed the static maintenance tolerance.~~

~~(Amended 1990 and 1992)~~

T.N.3.6.1. Accuracy Classes - Systems are divided into four accuracy classes as follows:

0.2 0.5 1 2

A system may be in a different accuracy class for wagon weighing than that for train weighing.

T.N.3.6.2. Tolerance Values – The acceptance and maintenance tolerance values shall be as specified in Table T.N.3.6 below:

<u>Accuracy Class</u>	<u>Table T.N.3.6. Percentage of mass of single wagon or train as appropriate</u>	
	<u>Acceptance Tolerance</u>	<u>Maintenance Tolerance</u>
<u>0.2</u>	<u>0.10%</u>	<u>0.20%</u>
<u>0.5</u>	<u>0.25%</u>	<u>0.50%</u>
<u>1</u>	<u>0.50%</u>	<u>1.00%</u>
<u>2</u>	<u>1.00%</u>	<u>2.00%</u>

T.N.3.6.3. Wagon Weighing – The tolerance value for uncoupled or coupled wagon weighing shall be one of the following values, whichever is greater:

a) **the value calculated according to the appropriate accuracy class in Table T.N.3.6., rounded to the nearest scale interval;**

b) **the value calculated according to the appropriate accuracy class in Table T.N.3.6., rounded to the nearest scale interval for the mass of a single wagon equal to 35 % of the maximum wagon mass (as inscribed on the descriptive markings); or**

c) 1 d.

On initial verification of an instrument weighing coupled wagons, the errors of not more than 10 % of the weighing results taken from one or more passes of the test train may exceed the appropriate tolerance value given in Table T.N.3.6.but shall not exceed two times that value.

T.N.3.6.4. Train Weighing – The tolerance value for train weighing shall be one of the following values, whichever is greater:

- a) **the value calculated according to the appropriate accuracy class in Table T.N.3.6., rounded to the nearest scale interval;**
- b) **the value calculated according to the appropriate accuracy class in Table T.N.3.6., for the mass of a single wagon equal to 35 % of the maximum wagon mass (as inscribed on the descriptive markings) multiplied by the number of reference wagons in the train (not exceeding 10 wagons) and rounded to the nearest scale interval, or**
- c) **1 d for each wagon in the train but not exceeding 10 d.**

Background/Discussion: See Appendix A, Page S&T-A32.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>This item received similar comments to relates item 3200-4: (Eric Golden (SMA) the SMA opposes this item as an unnecessary change to the code.) A comment was heard stating that the current code was appropriate. The committee believes this item should be further developed by the submitter.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-22 Sections Throughout the Code to Include Provisions for Commercial Weigh-in-Motion Vehicle Scale Systems

Note: This agenda item previously appeared on the Committee’s agenda as Agenda Item 325-1 in 2016 and 3205-1 in 2017.

The original purpose of this item was to recognize a higher accuracy class and appropriate requirements in Section 2.25. Weigh-In-Motion Systems Used for Vehicle Enforcement Screening Tentative Code by adding commercial and law enforcement applications. In particular, WIM vehicle scale systems capable of performing to within the tolerances specified for a higher accuracy class would be permitted for use in commercial applications and for highway law enforcement. The WIM Task Group (TG), however, agreed in 2016 that it would be more appropriate to address these higher accuracy WIM systems by proposing changes to Section 2.20. Scales Code, which remains the current effort of the TG.

Source:
Rinstrum, Inc. and Right Weigh Innovations (2016)

Purpose:
Recognize commercial Weigh-in-Motion vehicle scale systems.

Item under Consideration:
Amend NIST Handbook 44 Scales Code as follows:

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

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S.1.1.1. Digital Indicating Elements.

- (a) A digital zero indication shall represent a balance condition that is within $\pm \frac{1}{2}$ the value of the scale division.
- (b) *A digital indicating device shall either automatically maintain a “center-of-zero” condition to $\pm \frac{1}{4}$ scale division or less, or have an auxiliary or supplemental “center-of-zero” indicator that defines a zero-balance condition to $\pm \frac{1}{4}$ of a scale division or less. A “center-of-zero” indication may operate when zero is indicated for gross and/or net mode(s).
[Nonretroactive as of January 1, 1993]*

(c) **Weigh-in-Motion Vehicle Scales Zero or Ready Indication.**

(1) **Provision shall be made to indicate or record either a zero or ready condition.**

A zero or ready condition may be indicated by other than a continuous digital zero indication, provided that an effective automatic means is provided to inhibit a measuring operation when the device is in an out-of-zero or non-ready condition.

(Amended 1992 and 2008, and 20XX)

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S.1.8. Computing Scales.

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S.1.8.6. Values to be Recorded, Weigh-In-Motion Vehicle Scales. – At a minimum, the following values shall be printed and/or stored electronically for each vehicle weighment:

- (a) **lane identification (required if more than one lane at the site has the ability to weigh a vehicle in motion);**
- (b) **weight and sequence of each axle;**
- (c) **total vehicle weight;**
- (d) **time and date.**

(Added 20XX)

S.1.14. Weigh-In-Motion Vehicle Scale: Operational Limitation. - A weigh-in-motion vehicle scale shall not provide a weight indication or recorded representation if any operational limitation is exceeded.

(Added 20XX)

S.2. Design of Balance, Tare, Level, Damping, and Arresting Mechanisms.

S.2.1. Zero-Load Adjustment.

S.2.1.1. General. – A scale shall be equipped with means by which the zero-load balance may be adjusted. Any loose material used for this purpose shall be enclosed so that it cannot shift in position and alter the balance condition of the scale.

Except for an initial zero-setting mechanism, an automatic zero adjustment outside the limits specified in S.2.1.3. Scales Equipped with an Automatic Zero-Tracking Mechanism is prohibited.
(Amended 2010)

S.2.1.2. Scales used in Direct Sales. – A manual zero-setting mechanism (except on a digital scale with an analog zero-adjustment mechanism with a range of not greater than one scale division) shall be operable or accessible only by a tool outside of and entirely separate from this mechanism, or it shall be enclosed in a cabinet. Except on Class I or II scales, a balance ball shall either meet this requirement or not itself be rotatable.

A semiautomatic zero-setting mechanism shall be operable or accessible only by a tool outside of and separate from this mechanism or it shall be enclosed in a cabinet, or it shall be operable only when the indication is stable within plus or minus:

- (a) 3.0 scale divisions for scales of more than 2000 kg (5000 lb) capacity in service prior to January 1, 1981, and for all axle load, railway track, **weigh-in-motion vehicle systems**, and vehicle scales; or
(Amended 20XX)
- (b) 1.0 scale division for all other scales.

S.2.1.3. Scales Equipped with an Automatic Zero-Tracking Mechanism.

S.2.1.3.1. Automatic Zero-Tracking Mechanism for Scales Manufactured Between January 1, 1981, and January 1, 2007. – The maximum load that can be “rezeroed,” when either placed on or removed from the platform all at once under normal operating conditions, shall be for:

- (a) bench, counter, and livestock scales: 0.6 scale division;
- (b) vehicle, weigh-in-motion vehicle systems, axle load, and railway track scales: 3.0 scale divisions; and
(Amended 20XX)
- (c) all other scales: 1.0 scale division.

(Amended 2005)

S.2.1.3.2. Automatic Zero-Tracking Mechanism for Scales Manufactured on or after January 1, 2007. – The maximum load that can be “rezeroed,” when either placed on or removed from the platform all at once under normal operating conditions, shall be:

- (a) for vehicle, weigh-in-motion vehicle systems, axle load, and railway track scales: 3.0 scale divisions; and
- (b) for all other scales: 0.5 scale division.

(Added 2005)

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S.2.5. Damping Means. – An automatic-indicating scale and a balance indicator shall be equipped with effective means to damp oscillations and to bring the indicating elements quickly to rest.

S.2.5.1. Digital Indicating Elements. – Except for weigh-in-motion vehicle systems being operated in a dynamic mode, Digital-digital indicating elements equipped with recording elements shall be equipped with effective means to permit the recording of weight values only when the indication is stable within plus or minus:

(Amended 20XX)

- (a) 3.0 scale divisions for scales of more than 2000 kg (5000 lb) capacity in service prior to January 1, 1981, hopper (other than grain hopper) scales with a capacity exceeding 22 000 kg (50 000 lb), and for all vehicle, axle load, livestock, and railway track scales; and
- (b) 1.0 scale division for all other scales.

The values recorded shall be within applicable tolerances.

(Amended 1995)

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N.7. Weigh-in-Motion Vehicle Scale.

N.7.1. Static Testing. – **A Weigh-in-Motion Vehicle Scale shall be tested statically, whenever possible, using field standard weights / test loads in accordance with Table 4, uniformly distributed on the scale platform. Additionally, for scale platforms with a length of less than 4 feet a test load not greater than one half of section capacity shall be positioned between the centerline and left and right**

side respectively. Scale platforms with a length of 4 feet or greater shall be tested in accordance with N.1.3.3.1. Class III L acceptance and maintenance tolerance as shown in Table 6. shall apply.

N.7.2. Dynamic Testing. – The Dynamic test for a Weigh-in-Motion-Vehicle Scale shall simulate the normal intended use as closely as possible i.e. test as used. The minimum test shall consist of a vehicle(s), loaded with known field standards, dynamically weighed three consecutive times. The known field standards should then be unloaded and three additional dynamic weighments of the empty vehicle(s) should be recorded. Additionally, for scale platform widths greater than 11 feet, at least one of the loaded vehicle runs and empty vehicle runs shall be made near the left edge and right edge of the scale platform respectively. Class III L maintenance tolerance as shown in Table 6. shall apply to the known field test standards load minus the calculated value (loaded weight – unloaded weight = calculated value) the Table 6 tolerance values shall be based on the value of the known test load.

(Added 20XX)

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T.N.3. Tolerance Values.

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T.N.3.X. Tolerances for Weigh-in-Motion Vehicle Scales. –

T.N.3.X.1. Static Weighing. -Acceptance tolerance shall be one-half maintenance tolerance

T.N.3.X.2 Dynamic Weighing. - Acceptance tolerance shall be the same as the maintenance tolerance shown in Table 6. Maintenance Tolerances.

(Added 20XX)

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UR.1. Selection Requirements. – Equipment shall be suitable for the service in which it is used with respect to elements of its design, including but not limited to, its capacity, number of scale divisions, value of the scale division or verification scale division, minimum capacity, and computing capability.¹

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UR.1.6. Recording Element, Class III L Weigh-In-Motion Vehicle Scales. – Class III L Weigh-In-Motion Vehicle Scales must be equipped with a recording element.

(Added 20XX)

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UR.2.6. Approaches.

¹ Purchasers and users of scales such as railway track, hopper, and vehicle scales should be aware of possible additional requirements for the design and installation of such devices.

(Footnote Added 1995)

UR.2.6.1. Vehicle Scales. – *On the entrance and exit end(s) of a vehicle scale, there shall be a straight approach as follows:*

- (a) the width at least the width of the platform,*
- (b) the length at least one-half the length of the platform but not required to be more than 12 m (40 ft), and*
- (c) not less than 3 m (10 ft) of any approach adjacent to the platform shall be in the same plane as the platform. Any slope in the remaining portion of the approach shall ensure (1) ease of vehicle access, (2) ease for testing purposes, and (3) drainage away from the scale.*

In addition to (a), (b), and (c), scales installed in any one location for a period of six months or more shall have not less than 3 m (10 ft) of any approach adjacent to the platform constructed of concrete or similar durable material to ensure that this portion remains smooth and level and in the same plane as the platform; however, grating of sufficient strength to withstand all loads equal to the concentrated load capacity of the scale may be installed in this portion.

[Nonretroactive as of January 1, 1976]

(Amended 1977, 1983, 1993, 2006, and 2010)

UR.2.6.2. Axle-Load Scales. – At each end of an axle-load scale there shall be a straight paved approach in the same plane as the platform. The approaches shall be the same width as the platform and of sufficient length to insure the level positioning of vehicles during weight determinations.

UR.2.6.3. Weigh-in-Motion Vehicle Scales. - **At each end of a Weigh-in-Motion Vehicle Scale there shall be a straight approach in the same plane as the platform. The approaches shall be the same width as the platform and of sufficient length to insure the level positioning of vehicles during weight determinations. Both approaches shall be made of concrete or similar durable material (e.g., steel).**

(Added 20XX)

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UR.3.2. Maximum Load. – A scale shall not be used to weigh a load of more than the nominal capacity of the scale.

UR.3.2.1. Maximum Loading for Vehicle Scales. – A vehicle scale shall not be used to weigh loads exceeding the maximum load capacity of its span as specified in Table UR.3.2.1. Span Maximum Load.

(Added 1996)

Note: UR.3.2.1. is not applicable to Weigh-In-Motion Vehicle Scales.

(Added 20XX)

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UR.3.3. Single-Draft Vehicle Weighing. A vehicle or a coupled-vehicle combination shall be commercially weighed on a vehicle scale only as a single draft. That is, the total weight of such a vehicle or combination shall not be determined by adding together the results obtained by separately and not simultaneously weighing each end of such vehicle or individual elements of such coupled combination. However, the weight of:

- (a) a coupled combination may be determined by uncoupling the various elements (tractor, semitrailer, trailer), weighing each unit separately as a single draft, and adding together the results; or
- (b) a vehicle or coupled-vehicle combination may be determined by adding together the weights obtained while all individual elements are resting simultaneously on more than one scale platform.

Note: This paragraph does not apply to weigh-in-motion vehicle scales, highway-law-enforcement scales and scales used for the collection of statistical data.

(Added 1992) (~~Amended 20XX~~)

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UR.3.7. Minimum Load on a Vehicle Scale or Weigh-in-Motion Vehicle Scale. – A vehicle scale or weigh-in-motion vehicle scale shall not be used to weigh net loads smaller than:

- (a) 10 d when weighing scrap material for recycling or weighing refuse materials at landfills and transfer stations; and
- (b) 50 d for all other weighing.

As used in this paragraph, scrap materials for recycling shall be limited to ferrous metals, paper (including cardboard), textiles, plastic, and glass.

(Amended 1988, 1992, ~~and~~ 2006, and 20XX)

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UR.3.9. Use of Manual Weight Entries. – Manual gross or net weight entries are permitted for use in the following applications only when:

- (a) a point-of-sale system interfaced with a scale is giving credit for a weighed item;
- (b) an item is pre-weighed on a legal for trade scale and marked with the correct net weight;
- (c) a device or system is generating labels for standard weight packages;
- (d) postal scales or weight classifiers are generating manifests for packages to be picked up at a later time; or
- (e) livestock and vehicle scale or weigh-in-motion vehicle scale systems that generate weight tickets to correct erroneous tickets.

(Added 1992) (Amended 2000 ~~and~~ 2004, and 20XX)

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

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
<p>Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>)</p>

A comment was submitted electronically by Lou Straub (Fairbanks Scale) as a member of the WIM Task Group that there is disagreement within the task group on what kinds of tolerances should be met. Item submitter John Lawn (Rinstrum) Asked for maintenance and acceptance tolerance be the same. Eric Golden (Cardinal Scale) believes that the acceptance tolerance should be half the maintenance tolerance. WIM task group is looking for additional comments to further develop the item. This item is recommended to move forward as Informational and to be developed by the WIM task group.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3202 AUTOMATIC BULK WEIGHING SYSTEMS

3202-1 D A. Application, S Specifications, N. Notes, UR. User Requirements

Source:

Kansas (2016)

Purpose:

Modernize the ABWS code to more fully the 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 and 20XX)

S. Specifications

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

S.1.1. Zero Indication. – ~~Provisions An Automatic Bulk Weighing System (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.~~
(Amended 20XX)

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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.
(Amended 20XX)

S.1.6. Provision for Sealing Adjustable Components on Electronic Devices. – Provision shall be made for applying a security seal in a manner that requires the security seal to be broken before an adjustment can be made to any component affecting the performance of the device.

S.1.7. No Load Reference Values – An 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.
(Added 20XX)

S.1.8. Loaded Weight Values – An ABWS shall indicate and record loaded weight values for each weighment.
(Added 20XX)

S.1.9. Net Weight Values – An ABWS shall calculate and record net weight for each weighment.
(Added 20XX)

S.1.10. Net Weight Accumulation – An ABWS shall automatically accumulate and record the sum of all net weight values for each weighing process.
(Added 20XX)

S.3. Interlocks and Gate ControlProduct 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.
(Amended 20XX)

S.3.2. Interlocks. – Each automatic bulk weighing system shall have operating interlocks to provide for the following:

- (a) Product cannot be cycled and weighed if the weight recording element is disconnected or subjected to a power loss.
- (b) 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.**
- (c) A “low paper” sensor, when provided, is activated.
- (d) The system will operate only in the proper sequence in all modes of operation.
- (e) When an overflow alarm is activated, the system shall indicate and record an overflow condition.

(Amended 1993 **and 20XX)**

S.3.3. Overflow 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 overflow condition exists sensor**

~~which will cause the feed~~**product flow to the load receiving element must be stopped, gate to close, an alarm must activate, activate an alarm, and inhibit** weighing **must be inhibited** until the overfill condition has been corrected, **and some type of 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) **(Amended 20XX)**

~~(b) If the system is equipped with a Downstream storage devices and other equipment, permanent or temporary, lower garner or surge bin, that garner shall also which have the potential to interfere with weighment when overfilled or not functioning properly must have a means to prevent interference. When interference exist the system must stop, an alarm must activate, product flow must stop, weighing must be inhibited until the interference has been corrected, and some type of 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 **and 20XX**)

N. Notes

N.1. Testing Procedures.

N.1.1. Test Weights. – The increasing load test shall be conducted using test weights equal to at least 10 % of the capacity of the system:

(a) on automatic ~~grain~~ bulk-weighing systems installed after January 1, 1984 **used to weigh grain;** and

(b) on other automatic bulk-weighing systems installed after January 1, 1986.

(Amended 1987, **and 20XX**)

UR. User Requirements

UR.4. System Modification. – **Components of T**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 **and 20XX**)

Background/Discussion: See Appendix A, Page S&T-A37.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>No comments were heard on this item. The committee believes this item has merit but should remain in the hands of the source as a Developing item.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-28 A. Application and Appendix D: Definitions – batching system

Source:

Richard Suiter Consulting (2018)

Purpose:

Withdraw the current proposal in S&T Item 3200-1 to modify NIST Handbook 44 Section 2.20. Scales, paragraph S.1.2. to recognize batching systems and to add a definition for batching scale to Appendix D – Definitions, replacing it with a proposal to place an exception for batching systems in NIST Handbook 44 Section 2.22. Automatic Bulk Weighing Systems and to add a definition for batching system to Appendix D – Definitions.

Item under Consideration:

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

A.2. Exceptions. – This code does not apply to batching systems.

A.23. Additional Code Requirements. – In addition to the requirements of this code, Automatic Bulk Weighing Systems shall meet the requirements of Section 1.10. General Code.

And Appendix D: Definitions

batching system. – One in which raw materials are proportioned in pre-determined quantities by weight and/or liquid measure for inclusion in a finished product. 2.22. 3.36.

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

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input checked="" type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>No comments were heard by the committee. The committee believes this item is fully developed and ready to be voted on.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-7 N.2. Verification (Testing) Standards (See related items New-6 and New-8 through New-15)

Source:
NIST OWM (2018)

Purpose:
To remove the current limited definition and use of the term “Transfer Standard” and eliminate terms “Testing Standards”, “Verification (Testing) Standards”, and instead use the term Field Standard, consistent with its reference in Handbook 44, Appendix A, Fundamental Considerations and its use in several sections of Handbook 44. To correct the broad use of the term Transfer Standard and instead replace its use with the term Field Standard. To update all use of the term “standard” to use the term “Field Standard”. To remove the current limited definition of Transfer Standard and instead use the term Field Standard.

Item under Consideration:
Amend NIST Handbook 44, Automatic Bulk Weighing Systems Code as follows:

**~~N.2. Verification (Testing) Field Standards.~~ – Field Standard weights and masses used in verifying weighing devices shall comply with requirements of NIST Handbook 105-1 (Class F) or the tolerances expressed in Appendix A, Fundamental Considerations, paragraph 3.2. (i.e., one-third of the smallest tolerance applied).
(Amended 20XX)**

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

NEWMA Report
Regional recommendation to NCWM on item status: <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i>
Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i> This Item was included as part of Batch 2 which includes items New-6 through New-15. A comment was heard suggesting the definition could cause issues categorizing several field standards into transfer standards when this is not always the case. The intention is a nice idea but incorrect to say that everything we use in the field is a transfer standard. The committee believes this item has merit but requires further Development by the submitter.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3204 AUTOMATIC WEIGHING SYSTEMS

New-8 N.1.3. Verification (Testing) Standards, N.3.1. Official Tests, UR.4. Testing Standards (See related items New-6, New-7 and New-9 through New-15)

Source:
NIST OWM (2018)

Purpose:
To remove the current limited definition and use of the term “Transfer Standard” and eliminate terms “Testing Standards”, “Verification (Testing) Standards”, and instead use the term Field Standard, consistent with its reference in Handbook 44, Appendix A, Fundamental Considerations and its use in several sections of Handbook 44. To correct the broad use of the term Transfer Standard and instead replace its use with the term Field Standard. To update all use of the term “standard” to use the term “Field Standard”. To remove the current limited definition of Transfer Standard and instead use the term Field Standard.

Item under Consideration:
Amend NIST Handbook 44, Automatic Weighing Systems Code as follows:

N.1.3. ~~Verification (Testing)~~ Field Standards. – Field standard weights shall comply with requirements of NIST Handbook 105-1, “Specifications and Tolerances for Field Standard Weights (Class F)” or the tolerances expressed in Fundamental Considerations, paragraph 3.2. (i.e., one-third of the smallest tolerance applied).
(Amended 20XX)

N.3.1. Official Tests. – Officials are encouraged to periodically witness the required “in house” verification of accuracy. Officials may also conduct official tests using the on-site **testing field** standards or other appropriate standards belonging to the jurisdiction with statutory authority over the device or system.
(Amended 20XX)

UR.4. Testing Field Standards. – The user of a commercial device shall make available to the official with statutory authority over the device **testing field** standards that meet the tolerance expressed in Fundamental Considerations, paragraph 3.2. Tolerances for Standards (i.e., one-third of the smallest tolerance applied). The accuracy of the **testing field** standards shall be verified annually or on a frequency as required by the official with statutory authority and shall be traceable to the appropriate SI standard.
(Amended 20XX)

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

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>) </p>
<p>Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>)</p> <p>This Item was included as part of Batch 2 which includes items New-6 through New-15. A comment was heard suggesting the definition could cause issues categorizing several field standards into transfer standards when this is</p>

not always the case. The intention is a nice idea but incorrect to say that everything we use in the field is a transfer standard. The committee believes this item has merit but requires further Development by the submitter.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3300 LIQUID MEASURING DEVICES

New-2 N.4.1. Normal Tests (See related items New-3 and New-4)

Source:

North Carolina (2018)

Purpose:

To eliminate the special test tolerances for liquid measuring devices, vehicle tank meters and LPG and Anhydrous Ammonia Liquid Measuring devices to prevent the expansion of the minimum flow rates beyond the capability of the measuring element with the aid of the special tolerance formula.

Item under Consideration:

Amend NIST Handbook 44 Liquid Measuring Devices Code as follows:

N.4.1 Normal Tests. – The “normal” tests of a device shall be made at the maximum discharge rate developed by the installation. Any additional tests conducted at flow rates down to ~~and including one half of the sum of the maximum discharge flow rate and~~ the rated minimum discharge flow rate shall be considered normal tests.

(Amended 20XX)

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

NEWMA Report
Regional recommendation to NCWM on item status: <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input checked="" type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>) The submitter of this item asked that the item be withdrawn based on comments heard in discussion with the NTEP Measuring Sector. The committee supports the withdrawal of this item.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3300-2 D S.1.6.7. Recorded Representation, S.1.6.8. Recorded Representations for Transactions Where a Post-Delivery Discount(s) is Provided. and UR.3.4. Printed Ticket

Source:

Morrow County, Carroll County and Stark County, OH (2017)

Purpose:

Require that printed receipts declare an alpha or numeric pump designation that coincides with the dispensing device used for a specific transaction.

Item under Consideration:

Amend NIST Handbook 44 Liquid Measuring Devices Code as follows:

Note: The item under Consideration was modified by the developer for 2018.

S.1.6.7. Recorded Representations. – Except for fleet sales and other price contract sales and for transactions where a post-delivery discount is provided, a printed receipt providing the following information shall be available through a built-in or separate recording element for all transactions conducted with point-of-sale systems or devices activated by debit cards, credit cards, and/or cash:

- (a) *the total volume of the delivery;**
- (b) *the unit price;**
- (c) *the total computed price; ~~*and~~*
- (d) *the product identity by name, symbol, abbreviation, or code number. ~~* and~~*
- (e) *the dispenser designation by either an alpha or numerical description. ***
[Nonretroactive as of January 1, 1986] ~~[Nonretroactive as of January 1, 2021~~*
(Added 1985) (Amended 1997, 2012, ~~and~~ 2014 ~~and~~ 2019)

S.1.6.8. Recorded Representations for Transactions Where a Post-Delivery Discount(s) is Provided. – Except for fleet sales and other price contract sales, a printed receipt providing the following information shall be available through a built-in or separate recording element that is part of the system for transactions involving a post-delivery discount:

- (a) the product identity by name, symbol, abbreviation, or code number;
- (b) transaction information as shown on the dispenser at the end of the delivery and prior to any post-delivery discount(s), including the:
 - (1) total volume of the delivery;
 - (2) unit price; and
 - (3) total computed price of the fuel sale.
- (c) an itemization of the post-delivery discounts to the unit price; ~~and~~
- (e) the final total price of the fuel sale after all post-delivery discounts are applied, ~~, and~~ and
- (f) The dispenser designation by either an alpha or numeric description.

(Added 2012) (Amended 2014 ~~and 2019~~) [Nonretroactive as of January 1, 2021]

And

UR.3.4. Printed Ticket. - The total price, the total volume of the delivery, ~~and~~ the price per liter or gallon, and a corresponding alpha or numeric dispenser designation* shall be shown, either printed by the device or in clear hand script, on any printed ticket issued by a device and containing any one of these values.

(Amended 2001 ~~and 2019~~) *(Retroactive January 1, 2021)

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

NEWMA Report
Regional recommendation to NCWM on item status: <input checked="" type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>) No comments were heard on this item. The committee believes this item has been fully developed, has merit and is ready for a vote.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3301 VEHICLE-TANK METERS

New-30 S.3. Diversion of Measured Liquid and UR.2.6. Clearing the Discharge Hose. (See related item New-29)

Source:

New York (2018)

Purpose:

Provide specifications and user requirements for manifold flush systems. Recognize that there is a balance between a mechanism that provides an important safety benefit but also, if used incorrectly, facilitates fraud. Ensure that VTM owners understand their responsibilities when installing such a system and ensure uniformity in enforcement throughout the country.

Item under Consideration:

Amend NIST Handbook 44 Vehicle-Tank Meters Code as follows:

S.3.1. Diversion of Measured Liquid. – Except on equipment used exclusively for fueling aircraft and for metering systems with multiple compartments delivering multiple products through a single discharge hose, no means shall be provided by which any measured liquid can be diverted from the

measuring chamber of the meter or the discharge line thereof. However, two or more delivery outlets may be installed if means is provided to insure that:

- (a) liquid can flow from only one such outlet at one time; and
- (b) the direction of flow for which the mechanism may be set at any time is definitely and conspicuously indicated.

S.3.1.1. Means for Clearing the Discharge Hose. For metering systems with multiple compartments delivering multiple products through a single discharge hose, means shall be provided to clear the discharge hose prior to delivery to avoid product contamination. A valve to temporarily divert product from the measuring chamber of the meter to a storage tank, shall be installed only if:

- (a) **the valve and associated piping are approved by the weights and measures authority having jurisdiction over the device prior to commercial use; and**
- (b) **the valve is permanently marked with its purpose (e.g. flush valve); and**
- (c) **the valve is installed in a conspicuous manner and as far from the hose-reel as practical; and**
- (d) **the system clearly and automatically indicates the direction of product flow during operation; and**
- (e) **clear means, such as an indicator light or audible alarm, is used to identify when the valve is in use; and**
- (f) **no hoses or piping are connected to the inlet when it is not in use.**

(Added 20XX)

and

UR.2.6. Clearing the Discharge Hose

UR.2.6.1. Records. Whenever, prior to delivery, a different product is pumped through the discharge hose to avoid contamination, a record including the date, time, original product, new product and gallons pumped shall be maintained. These records shall be kept and available for inspection by weights and measures for a period of 12 months

(Added 20XX)

Background/Discussion: See Appendix A, Page S&T-A46.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>The meeting received a presentation from the submitter on this item. This item has been fully developed by the submitter and the committee believes it should move forward as an Informational item.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-3 N.4.1. Normal Tests (See related items New-2 and New-4)

Source:

North Carolina (2018)

Purpose:

To eliminate the special test tolerances for liquid measuring devices, vehicle tank meters and LPG and Anhydrous Ammonia Liquid Measuring devices to prevent the expansion of the minimum flow rates beyond the capability of the measuring element with the aid of the special tolerance formula.

Item under Consideration:

Amend NIST Handbook 44 Vehicle Tank Meters Code as follows:

N.4.1 Normal Tests. – The “normal” tests of a device shall be made at the maximum discharge rate developed by the installation. Any additional tests conducted at flow rates down to ~~and including one-half of the sum of the maximum discharge flow rate and~~ the rated minimum discharge flow rate shall be considered normal tests.

(Amended 20XX)

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

NEWMA Report
Regional recommendation to NCWM on item status: <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input checked="" type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i>
Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i> The submitter of this item asked that the item be withdrawn based on comments heard in discussion with the NTEP Measuring Sector. The committee supports the withdrawal of this item.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3302 LPG AND ANHYDROUS AMMONIA LIQUID-MEASURING DEVICES

New-5 S.2.5. Zero-Set-Back Interlock, Stationary and Vehicle Mounted Meters, Electronic

Source:

Maryland (2018)

Purpose:

To align the LPG code with the VTM code for electronic registers/indicators used in stationary and mobile applications.

Item under Consideration:

Amend NIST Handbook 44 LPG and Anhydrous Ammonia Liquid-Measuring Devices Code as follows:

S.2.5. Zero-Set-Back Interlock, Stationary and Vehicle Mounted Meters, Electronic. - A device shall be so constructed that after an individual or multiple deliveries at one location have been completed, an automatic interlock system shall engage to prevent a subsequent delivery until the indicating and, if equipped, recording elements have been returned to their zero position. For individual deliveries, if there is no product flow for three minutes the transaction must be completed before additional product flow is allowed. The 3-minute timeout shall be a sealable feature on an indicator.

(Added 20XX) (Nonretroactive as of 20XX)

S.2.65. Zero-Set-Back Interlock for Stationary Retail Motor-Fuel Devices. – A device shall be constructed so that:

- .
- .
- .

Re-number remaining paragraphs

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

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input checked="" type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>) </p>
<p>Comments and justification for the regional recommendation to NCWM: (This will appear in NCWM reports)</p> <p>There was some clarification provided on the purpose of this item and the committee believes it has been fully developed. This item is recommended as a Voting item.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-18 S.2.1. Vapor Elimination. (See related items New-17 and New-18)

Source:

NIST OWM (2018)

Purpose:

To align language in Sections 3.32 LPG and Anhydrous Ammonia Liquid-Measuring Devices Code; 3.34 Cryogenic Liquid Measuring Devices Code; and 3.38. Carbon Dioxide Liquid-Measuring Devices Code with changes adopted

in 2017 to the Liquid-Measuring Devices Code; the Vehicle-Tank Meters Code; the Milk Meters Code; the Water Meters Code; and the Mass Flow Meters Code.

Item under Consideration:

Amend NIST Handbook 44 LPG and Anhydrous Ammonia Liquid-Measuring Devices as follows:

S.2.1. Air/Vapor Elimination. A **device measuring system** shall be equipped with an effective **air/vapor eliminator or other** automatic means to prevent the passage of **air/vapor** through the meter. Vent lines from the **air/vapor** eliminator shall be made of appropriate non-collapsible material.
(Amended 2016 **and 20XX**)

Background/Discussion: See Appendix A, Page S&T-A48.

NEWMA Report
Regional recommendation to NCWM on item status: <input checked="" type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>) This item includes editorial changes and no comments were heard. The committee believes this item has been fully developed and is ready for a vote.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3302-1 D N.3. Test Drafts.

Note: This item was modified by the developer on September 8, 2017. It previously appeared on the Committee's agenda as 332-2 in 2015 and 332-5 in 2016.

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 1 minute at its normal discharge rate.
(Amended 1982)

N.3.2. Field Reference Standard Meter Test. – The minimum quantity for any test draft shall be equal to or greater than the amount delivered in one minute at the flow rate being tested. (Added 20XX)

Background/Discussion: See Appendix A, Page S&T-A48.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>This item has been recently modified by the submitter. It is currently being developed by the submitter. The committee believes this item has merit but should remain developing at this time.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-4 N.4.1. Normal Tests (See related items New-2 and New-3)

Source:
North Carolina (2018)

Purpose:
To eliminate the special test tolerances for liquid measuring devices, vehicle tank meters and LPG and Anhydrous Ammonia Liquid Measuring devices to prevent the expansion of the minimum flow rates beyond the capability of the measuring element with the aid of the special tolerance formula.

Item under Consideration:
Amend NIST Handbook 44 LPG and Anhydrous Ammonia Liquid-Measuring Devices Code as follows:

N.4.1 Normal Tests. – The “normal” tests of a device shall be made at the maximum discharge rate developed by the installation. Any additional tests conducted at flow rates down to ~~and including one-half of the sum of the maximum discharge flow rate and~~ the rated minimum discharge flow rate shall be considered normal tests.
(Amended 20XX)

Background/Discussion: See Appendix A, Page S&T-A55.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input checked="" type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>

NEWMA Report
Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i>
The submitter of this item asked that the item be withdrawn based on comments heard in discussion with the NTEP Measuring Sector. The committee supports the withdrawal of this item.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3302-2 D N.4.1.2. Repeatability Tests and N.4.2.4. Repeatability Tests for Type Evaluation

Source:

Ross Andersen, Retired (2017)

Purpose:

Address differences between Handbook44 and Publication 14 practices for LPG Liquid Meter testing.

Item under Consideration:

Amend NIST Handbook 44 Liquid Measuring Devices Code as follows:

N.4.1.2. Repeatability Tests. – Tests for repeatability should include a minimum of three consecutive test drafts of approximately the same size and be conducted under controlled conditions where variations in factors such as temperature, pressure, and flow rate are reduced to the extent that they will not affect the results obtained. Repeatability tests shall be based on the uncompensated volume, e.g. with the temperature compensator deactivated. Both field tests and type evaluation tests shall be run at flow rates consistent with normal tests as specified in N.4.1.

(Amended 20XX)

Add a new Paragraph N.4.2.4. as follows:

N.4.2.4. Repeatability Tests for Type Evaluation. – Tests for repeatability should include a minimum of three consecutive test drafts of approximately the same size and be conducted under controlled conditions where variations in factors such as temperature, pressure, and flow rate are reduced to the extent that they will not affect the results obtained. Repeatability tests shall be based on the uncompensated volume, e.g. with the temperature compensator deactivated. Type evaluation tests shall be run at flow rates consistent with special tests as specified in N.4.2., N.4.2.1., N.4.2.2., or N.4.2.3. as appropriate.

(Added 20XX)

Background/Discussion: See Appendix A, Page S&T-A55.

NEWMA Report
Regional recommendation to NCWM on item status:
<input checked="" type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i>
Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i>

A comment was heard that the test currently being conducted by NTEP did not have any legal basis. The language in this item merely allows NTEP to conduct the same test legally. The committee feels this item is fully developed and ready to be voted on.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3304 CRYOGENIC LIQUID-MEASURING DEVICES

New-19 S.2.1. Vapor Elimination. (See related items New-16 and New-18)

Source:
NIST OWM (2018)

Purpose:
To align language in Sections 3.32 LPG and Anhydrous Ammonia Liquid-Measuring Devices Code; 3.34 Cryogenic Liquid Measuring Devices Code; and 3.38. Carbon Dioxide Liquid-Measuring Devices Code with changes adopted in 2017 to the Liquid-Measuring Devices Code; the Vehicle-Tank Meters Code; the Milk Meters Code; the Water Meters Code; and the Mass Flow Meters Code.

Item under Consideration:
Amend NIST Handbook 44, Cryogenic Liquid-Measuring Devices Code as follows:

S.2.1. Air/Vapor Elimination. – A measuring system shall be equipped with an effective air/vapor eliminator or other **effective automatic** means to prevent the ~~measurement of vapor that will cause errors in excess of the applicable tolerances~~ **passage of air/vapor through the meter. Vent lines from the air/vapor eliminator shall be made of appropriate non-collapsible material.** (Also see Section T. Tolerances.)
(Amended 20XX)

Background/Discussion: See Appendix A, Page S&T-A58.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input checked="" type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>No comments were heard on this item. This item is fully developed and the committee recommends it move forward as a voting item.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-9 N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards (See related items New-6 through New-8 and New-10 through New-15)

Source:
NIST OWM (2018)

Purpose:
To remove the current limited definition and use of the term “Transfer Standard” and eliminate terms “Testing Standards”, “Verification (Testing) Standards”, and instead use the term Field Standard, consistent with its reference in Handbook 44, Appendix A, Fundamental Considerations and its use in several sections of Handbook 44. To correct the broad use of the term Transfer Standard and instead replace its use with the term Field Standard. To update all use of the term “standard” to use the term “Field Standard”. To remove the current limited definition of Transfer Standard and instead use the term Field Standard.

Item under Consideration:
Amend NIST Handbook 44, Cryogenic Liquid-Measuring Devices Code as follows:

N.3.2. Transfer Field Standard Test. – When comparing a meter with a calibrated ~~transfer field~~ standard, the test draft shall be equal to at least the amount delivered by the device in two minutes at its maximum discharge rate, and shall in no case be less than 180 L (50 gal) or equivalent thereof. When testing uncompensated volumetric meters in a continuous recycle mode, appropriate corrections shall be applied if product conditions are abnormally affected by this test mode.
(Amended 1976 ~~and 20XX~~)

~~**T.3. On Tests Using Transfer Standards.**— To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable transfer standard when compared to a basic reference standard. (Added 1976)~~

Background/Discussion: See Appendix A, Page S&T-A58.

NEWMA Report
Regional recommendation to NCWM on item status: <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>) This Item was included as part of Batch 2 which includes items New-6 through New-15. A comment was heard suggesting the definition could cause issues categorizing several field standards into transfer standards when this is not always the case. The intention is a nice idea but incorrect to say that everything we use in the field is a transfer standard. The committee believes this item has merit but requires further Development by the submitter.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-24 N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards (See related items New-25 through New-27)

Source:

Endress+Hauser Flowtec AG (2018)

Purpose:

Add definition field reference standard meter to HB 44. Delete transfer standard definition. Change terms in sections 3.34, 3.38 and 3.39.

Item under Consideration:

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

N.3.2. ~~Field Reference~~Transfer Standard Meter Test. – When comparing a meter with a calibrated **field referencetransfer** standard **meter**, the test draft shall be equal to at least the amount delivered by the device in two minutes at its maximum discharge rate, and shall in no case be less than 180 L (50 gal) or equivalent thereof. When testing uncompensated volumetric meters in a continuous recycle mode, appropriate corrections shall be applied if product conditions are abnormally affected by this test mode.
(Amended 1976 ~~and 20XX~~)

T.3. On Tests Using Field ReferenceTransfer Standards Meters. – To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable **field referencetransfer**-standard **meter** when compared to a basic reference standard. (Added 1976)

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

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>) </p>
<p>Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>)</p> <p>This item is part of Batch 3 which includes items New-24 through New-27. Comments were heard on all items. A comment was heard questioning whether this should not be considered a master meter. This item has merit but the committee feels it should remain Developing at this time.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3306 WATER METERS

New-16 S.2.1. Provision for Sealing and Table S.2.1. Categories of Device and Methods of Sealing

Source:

California (2018)

Purpose:

Standardize sealing requirements in the Water Meter Code with the LMD code.

Item under Consideration:

Amend NIST Handbook 44 Water Meters Code as follows:

S.2.1. Provision for Sealing. – Adequate provision shall be made for **an approved means of security (e.g., data change audit trail) or for physically** applying ~~a~~ security seals in such a manner that **requires the security seal to be broken before an** ~~no~~ adjustment or interchange can be made of:

- (a) any measuring **or indicating** element; ~~and~~
- (b) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries; **and**
- (c) **any metrological parameter that will affect the metrological integrity of the device or system.**

When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

(Amended 20XX)

[Audit trails shall use the format set forth in Table S.2.1.]*

<u>Table S.2.1.</u>	
<u>Categories of Device and Methods of Sealing</u>	
<u>Categories of Device</u>	<u>Methods of Sealing</u>
<u>Category 1: No remote configuration capability.</u>	<u>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</u>
<u>Category 2: Remote configuration capability, but access is controlled by physical hardware.</u> <u>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.</u>	<u>[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.]*</u> <u>[*Nonretroactive as of January 1, 1996]</u>
<u>Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</u> <u>[Nonretroactive as of January 1, 1995]</u> <u>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.</u> <u>[Nonretroactive as of January 1, 2001]</u>	<u>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.)</u>

(Added 20XX)

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

NEWMA Report
Regional recommendation to NCWM on item status: <input checked="" type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>) No comments were heard on this item. The committee determined that this item has merit and is fully developed. It is recommended to move forward as a vote.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3307 MASS FLOW METERS

3307-2 D N.3. Test Drafts.

Note: This item was modified by the developer on September 8, 2017. It previously appeared on the Committee's agenda as 337-3 in 2015 and 2016.

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 - The minimum test shall be one test draft at the maximum flow rate of the installation and one test draft at the minimum flow rate. More tests may be performed at these or other flow rates. (See T.3. Repeatability.)
(Amended 1982 **and 20XX**)

N.3.2. Field Reference Standard Meter Test. – The minimum quantity for any test draft shall be equal to or greater than the amount delivered in one minute at the flow rate being tested.
(Added 20XX)

Background/Discussion: See Appendix A, Page S&T-A61.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>) </p>
<p>Comments and justification for the regional recommendation to NCWM: (This will appear in NCWM reports)</p> <p>This item was recently modified by the source. No comments were heard. As this time the item is still being developed and the committee recommends it remain in Developing status.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3308 CARBON DIOXIDE LIQUID-MEASURING DEVICES

New-20 S.2.1. Vapor Elimination. (See related items New-16 and New-17)

Source:
NIST OWM (2018)

Purpose:
To align language in Sections 3.32 LPG and Anhydrous Ammonia Liquid-Measuring Devices Code; 3.34 Cryogenic Liquid Measuring Devices Code; and 3.38. Carbon Dioxide Liquid-Measuring Devices Code with changes adopted in 2017 to the Liquid-Measuring Devices Code; the Vehicle-Tank Meters Code; the Milk Meters Code; the Water Meters Code; and the Mass Flow Meters Code.

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

S.2. Design of Measuring Elements.

S.2.1. Air/Vapor Elimination.

- (a) A ~~device~~ **measuring system** shall be equipped with an effective **air/vapor eliminator or other** automatic means to prevent the passage of **air**/vapor through the meter.
 - (b) Vent lines from the **air**/vapor eliminator shall be made of appropriate non-collapsible material.
- (Amended 2016 ~~and 20XX~~)

Background/Discussion: See Appendix A, Page S&T-A64.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input checked="" type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda </p>

<input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>)
No comments were heard on this item. The committee feels this item is fully developed and ready to be voted on.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-10 N.3.2. Transfer Standard Test, T.3. On Tests Using Transfer Standards (See related items New-6 through New-9 and New-11 through New-15)

Source:
NIST OWM (2018)

Purpose:
To remove the current limited definition and use of the term “Transfer Standard” and eliminate terms “Testing Standards”, “Verification (Testing) Standards”, and instead use the term Field Standard, consistent with its reference in Handbook 44, Appendix A, Fundamental Considerations and its use in several sections of Handbook 44. To correct the broad use of the term Transfer Standard and instead replace its use with the term Field Standard. To update all use of the term “standard” to use the term “Field Standard”. To remove the current limited definition of Transfer Standard and instead use the term Field Standard.

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

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

(Amended 20XX)

~~T.3. On Tests Using Transfer Standards. — To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable transfer standard when compared to a basic reference standard.~~

Background/Discussion: See Appendix A, Page S&T-A65.

NEWMA Report
Regional recommendation to NCWM on item status:
<input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>)
This Item was included as part of Batch 2 which includes items New-6 through New-15. A comment was heard suggesting the definition could cause issues categorizing several field standards into transfer standards when this is

not always the case. The intention is a nice idea but incorrect to say that everything we use in the field is a transfer standard. The committee believes this item has merit but requires further Development by the submitter.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-25 N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards (See related items New-24, New-26 and New-27)

Source:

Endress+Hauser Flowtec AG (2018)

Purpose:

Add definition field reference standard meter to HB 44. Delete transfer standard definition. Change terms in sections 3.34, 3.38 and 3.39.

Item under Consideration:

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

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

(Amended 20XX)

T.3. On Tests Using ~~Transfer Standards Meters~~. – To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable **field reference** standard when compared to a basic **field reference** standard **meter**.

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

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>This item is part of Batch 3 which includes items New-24 through New-27. Comments were heard on all items. A comment was heard questioning whether this should not be considered a master meter. This item has merit but the committee feels it should remain Developing at this time.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3309 HYDROGEN GAS-MEASURING DEVICES – TENTATIVE CODE

New-11 N.4.1. Master Meter (Transfer) Standard Test, T.4. Tolerance Application on Test Using Transfer Standard Test Method (See related items New-6 through New-10 and New-12 through New-15)

Source:
NIST OWM (2018)

Purpose:
To remove the current limited definition and use of the term “Transfer Standard” and eliminate terms “Testing Standards”, “Verification (Testing) Standards”, and instead use the term Field Standard, consistent with its reference in Handbook 44, Appendix A, Fundamental Considerations and its use in several sections of Handbook 44. To correct the broad use of the term Transfer Standard and instead replace its use with the term Field Standard. To update all use of the term “standard” to use the term “Field Standard”. To remove the current limited definition of Transfer Standard and instead use the term Field Standard.

Item under Consideration:
Amend NIST Handbook 44, Hydrogen Gas-Measuring Devices Tentative Code as follows:

N.4.1. Master Meter (~~Transfer~~) Field Standard Test. – When comparing a measuring system with a calibrated ~~transfer field~~ standard, the minimum test shall be one test draft at the declared minimum measured quantity and one test draft at approximately ten times the minimum measured quantity or 1 kg, whichever is greater. More tests may be performed over the range of normal quantities dispensed.
(Amended 20XX)

~~T.4. Tolerance Application on Test Using Transfer Standard Test Method. — To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable transfer standard when compared to a basic reference standard.~~

Background/Discussion: See Appendix A, Page S&T-A67.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>This Item was included as part of Batch 2 which includes items New-6 through New-15. A comment was heard suggesting the definition could cause issues categorizing several field standards into transfer standards when this is not always the case. The intention is a nice idea but incorrect to say that everything we use in the field is a transfer standard. The committee believes this item has merit but requires further Development by the submitter.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-26 N.4.1. Master Meter (Transfer) Standard Test and T.4. Tolerance Application on Test Using Transfer Standard Test Method (See related items New-24, New-25 and New-27)

Source:

Endress+Hauser Flowtec AG (2018)

Purpose:

Add definition field reference standard meter to HB 44. Delete transfer standard definition. Change terms in sections 3.34, 3.38 and 3.39.

Item under Consideration:

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

N.4.1. ~~Field Reference Master Meter (Transfer) Standard Meter Test.~~ – When comparing a measuring system with a calibrated ~~transfer~~ **field reference** standard **meter**, the minimum test shall be one test draft at the declared minimum measured quantity and one test draft at approximately ten times the minimum measured quantity or 1 kg, whichever is greater. More tests may be performed over the range of normal quantities dispensed.

(Amended 20XX)

T.4. Tolerance Application on Test Using ~~Transfer Standard Meters Test Method.~~ – To the basic tolerance values that would otherwise be applied, there shall be added an amount equal to two times the standard deviation of the applicable ~~transfer~~ **field reference** standard **meter** when compared to a basic reference standard.

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

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>) </p>
<p>Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>)</p> <p>This item is part of Batch 3 which includes items New-24 through New-27. Comments were heard on all items. A comment was heard questioning whether this should not be considered a master meter. This item has merit but the committee feels it should remain Developing at this time.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3504 TAXIMETERS

New-23 S.1.2.2. Distance Mechanism and S.1.5.3. Distance Not Recording.

Source:
NIST OWM (2018)

Purpose:
Amend the effective date for the nonretroactive status for two paragraphs (S.1.2.2. Distance Mechanism, and S.1.5.3. Distance not Recording) to allow a reasonable time period for taximeter manufacturers to bring their devices in compliance.

Item under Consideration:
Amend NIST Handbook 44, Taximeters Code as follows:

S.1.2.2. Distance Mechanism. – Means shall be provided on all taximeters designed to calculate fare based on a combination of time elapsed and/or distance traveled to enable the vehicle operator to render the distance mechanism either operative or inoperative with respect to the fare-indicating mechanism. [Nonretroactive as of January 1, ~~2018~~ 2020]
(Added 2017)

S.1.5.3. Distance Not Recording. – When a taximeter is set for fare registration with the distance mechanism inoperative, it shall indicate “Distance Not Recording” or an equivalent expression. [Nonretroactive as of January 1, ~~2018~~ 2020]
(Added 2017)

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

NEWMA Report
Regional recommendation to NCWM on item status: <input checked="" type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>) Mike Sikula (NYS) New York supports this item. This item has been fully developed and is recommended to move forward as a voting item.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3506 GRAIN MOISTURE METERS

New-12 5.56(a): N.1.1. Air Oven Reference Method Transfer Standards, N.1.3. Meter to Like-Type Meter Method Transfer Standards and 5.56(b): N.1.1. Transfer Standards, T. Tolerances¹ (See related items New-6 through New-11 and New-13 through New-15)

Source:
NIST OWM (2018)

Purpose:

To remove the current limited definition and use of the term “Transfer Standard” and eliminate terms “Testing Standards”, “Verification (Testing) Standards”, and instead use the term Field Standard, consistent with its reference in Handbook 44, Appendix A, Fundamental Considerations and its use in several sections of Handbook 44. To correct the broad use of the term Transfer Standard and instead replace its use with the term Field Standard. To update all use of the term “standard” to use the term “Field Standard”. To remove the current limited definition of Transfer Standard and instead use the term Field Standard.

Item under Consideration:

Amend NIST Handbook 44, Grain Moisture Meters Code as follows:

5.56.(a) Grain Moisture Meters

N.1.1. Air Oven Reference Method ~~Transfer~~ Field Standards. – Official grain samples shall be used as the official ~~transfer field~~ standards with moisture content and test weight per bushel values assigned by the reference methods. The reference methods for moisture shall be the oven drying methods as specified by the USDA GIPSA. The test weight per bushel value assigned to a test weight transfer standard shall be the average of 10 test weight per bushel determinations using the quart kettle test weight per bushel apparatus as specified by the USDA GIPSA. Tolerances shall be applied to the average of at least three measurements on each official grain sample. Official grain samples shall be clean and naturally moist, but not tempered (i.e., water not added). (Amended 1992, 2001, ~~and~~ 2003, and 20XX)

N.1.3. Meter to Like-Type Meter Method Transfer Standards. – Properly standardized reference meters using National Type Evaluation Program approved calibrations shall be used as ~~transfer field~~ standards. A reference meter shall be of the same type as the meter under test. Tests shall be conducted side-by-side using, as a comparison medium, grain samples that are clean and naturally moist, but not tempered (i.e., water not added). (Added 2001) (Amended 20XX)

5.56.(b) Grain Moisture Meters

N.1.1. ~~Transfer~~ Field Standards. – Official grain samples shall be used as the official ~~transfer field~~ standards with moisture content values assigned by the reference methods. The reference methods shall be the oven drying methods as specified by the USDA GIPSA. Tolerances shall be applied to the average of at least three measurements on each official grain sample. Official grain samples shall be clean and naturally moist, but not tempered (i.e., water not added). (Amended 1992 and 20XX)

T. Tolerances¹

¹These tolerances do not apply to tests in which grain moisture meters are the ~~transfer field~~ standards.

(Amended 20XX)

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

NEWMA Report
Regional recommendation to NCWM on item status: <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>) This Item was included as part of Batch 2 which includes items New-6 through New-15. A comment was heard suggesting the definition could cause issues categorizing several field standards into transfer standards when this is not always the case. The intention is a nice idea but incorrect to say that everything we use in the field is a transfer standard. The committee believes this item has merit but requires further Development by the submitter.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3509 ELECTRONIC LIVESTOCK, MEAT AND POULTRY EVALUATION SYSTEMS AND/OR DEVICES

New-13 N.2. Testing Standards (See related items New-6 through New-12. New-14 and New-15)

Source:
NIST OWM (2018)

Purpose:
To remove the current limited definition and use of the term “Transfer Standard” and eliminate terms “Testing Standards”, “Verification (Testing) Standards”, and instead use the term Field Standard, consistent with its reference in Handbook 44, Appendix A, Fundamental Considerations and its use in several sections of Handbook 44. To correct the broad use of the term Transfer Standard and instead replace its use with the term Field Standard. To update all use of the term “standard” to use the term “Field Standard”. To remove the current limited definition of Transfer Standard and instead use the term Field Standard.

Item under Consideration:
Amend NIST Handbook 44, Electronic Livestock, Meat and Poultry Evaluation Systems and/or Devices Code as follows:

N.2. Testing Field Standards. – ASTM Standard F2343 requires device or system users to maintain accurate **reference field** standards that meet the tolerance expressed in NIST Handbook 44 Fundamental Considerations, paragraph 3.2. Tolerances for Standards (i.e., one-third of the smallest tolerance applied).

(Amended 20XX)

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

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>) </p>
<p>Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>)</p> <p>This Item was included as part of Batch 2 which includes items New-6 through New-15. A comment was heard suggesting the definition could cause issues categorizing several field standards into transfer standards when this is not always the case. The intention is a nice idea but incorrect to say that everything we use in the field is a transfer standard. The committee believes this item has merit but requires further Development by the submitter.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3600 OTHER ITEMS

3600-1 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 USNWG is continuing work to develop a proposed code for electricity-measuring devices used in sub-metering electricity at residential and business locations. This does not include metering systems under the jurisdiction of public utilities. The USNWG hopes to have a draft code for consideration by the community in the 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-A73.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>This item is currently being developed as an item on the L&R committee agenda. The USNWG is still developing this item and committee recommends it be designated as such.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-14 Appendix A: Fundamental Considerations, 3.2. Tolerances for Standards, 3.3. Accuracy of Standards (See related items New-6 through New-13 and New-15)

Source:
NIST OWM (2018)

Purpose:
To remove the current limited definition and use of the term “Transfer Standard” and eliminate terms “Testing Standards”, “Verification (Testing) Standards”, and instead use the term Field Standard, consistent with its reference

in Handbook 44, Appendix A, Fundamental Considerations and its use in several sections of Handbook 44. To correct the broad use of the term Transfer Standard and instead replace its use with the term Field Standard. To update all use of the term “standard” to use the term “Field Standard”. To remove the current limited definition of Transfer Standard and instead use the term Field Standard.

Item under Consideration:

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

3.2. Tolerances for Field Standards. – Except for work of relatively high precision, it is recommended that the accuracy of standards used in testing commercial weighing and measuring equipment be established and maintained so that the use of corrections is not necessary. When the standard is used without correction, its combined error and uncertainty must be less than one-third of the applicable device tolerance.

Device testing is complicated to some degree when corrections to standards are applied. When using a correction for a standard, the uncertainty associated with the corrected value must be less than one-third of the applicable device tolerance. The reason for this requirement is to give the device being tested as nearly as practicable the full benefit of its own tolerance.

(Amended 20XX)

3.3. Accuracy of Field Standards. – Prior to the official use of testing apparatus, its accuracy should invariably be verified. Field standards should be calibrated as often as circumstances require. By their nature, metal volumetric field standards are more susceptible to damage in handling than are standards of some other types. A field standard should be calibrated whenever damage is known or suspected to have occurred or significant repairs have been made. In addition, field standards, particularly volumetric standards, should be calibrated with sufficient frequency to affirm their continued accuracy, so that the official may always be in an unassailable position with respect to the accuracy of his testing apparatus. Secondary field standards, such as special fabric testing tapes, should be verified much more frequently than such basic standards as steel tapes or volumetric provers to demonstrate their constancy of value or performance.

Accurate and dependable results cannot be obtained with faulty or inadequate field standards. If either the service person or official is poorly equipped, their results cannot be expected to check consistently. Disagreements can be avoided and the servicing of commercial equipment can be expedited and improved if service persons and officials give equal attention to the adequacy and maintenance of their testing apparatus.

(Amended 20XX)

Background/Discussion: See Appendix A, Page S&T-A74.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>This Item was included as part of Batch 2 which includes items New-6 through New-15. A comment was heard suggesting the definition could cause issues categorizing several field standards into transfer standards when this is not always the case. The intention is a nice idea but incorrect to say that everything we use in the field is a transfer standard. The committee believes this item has merit but requires further Development by the submitter.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

**3600-2 D Appendix A – Fundamental Considerations: Section 4.4. General Considerations
(See related items 3100-1 and 3200-5)**

Source:

Ross Andersen, Retired (2017)

Purpose:

Address the application of the code requirements across multiple devices.

Item under Consideration:

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

4.4. General Considerations. –

The simpler the commercial device, the fewer are the specification requirements affecting it, and the more easily and quickly can adequate inspection be made. As mechanical complexity increases, however, inspection becomes increasingly important and more time consuming, because the opportunities for the existence of faulty conditions are multiplied. It is on the relatively complex device, too, that the official must be on the alert to discover any modification that may have been made by an operator that might adversely affect the proper functioning of the device. **Code requirements in the Handbook are applied only to a single device or system, unless specifically stated in the code. An electronic sum of measured values from multiple devices is not subject to code requirements, except that it be mathematically correct, i.e. add up to the proper sum - See General Code G-S.5.2.2.(e).**

It is essential for the officials to familiarize themselves with the design and operating characteristics of the devices that he inspects and tests. Such knowledge can be obtained from the catalogs and advertising literature of device manufacturers, from trained service persons and plant engineers, from observation of the operations performed by service persons when reconditioning equipment in the field, and from a study of the devices themselves.

Inspection should include any auxiliary equipment and general conditions external to the device that may affect its performance characteristics. In order to prolong the life of the equipment and forestall rejection, inspection should also include observation of the general maintenance of the device and of the proper functioning of all required elements. The official should look for worn or weakened mechanical parts, leaks in volumetric equipment, or elements in need of cleaning.

(Amended 20XX)

Background/Discussion: See Appendix A, Page S&T-A76.

NEWMA Report
Regional recommendation to NCWM on item status: <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>) <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>)
Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>)

This item is part of Batch 1 which includes 3100-1, 3200-5 and 3600-2. Ross Andersen (submitter) gave a presentation on the items. Eric Golden (SMA) commented that the SMA oppose recommends further development. Ross Anderson recommends that 3100-1 be withdrawn and that 3200-5 and 3600-2 be moved forward as developing items. The committee heard comments in support of this and moves that 3100-1 be Withdrawn while 3200-5 and 3600-2 are designated Developing.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-1 Appendix D – Definitions: Batch (Batching)

Source:
Kansas (2018)

Purpose:
To clarify when batching is a metrologically significant event.

Item under Consideration:
Amend NIST Handbook 44, Appendix D. Definitions and follows:

batch (batching). - The separate weighment or measurement of two or more products consecutively, using the same load receiving or measuring element, without emptying or re-zeroing the device between weighments or measurements. Batching may be performed by many kinds of devices including but not limited to Scales and Automatic Bulk Weighing Systems. (Added 20XX)

Background/Discussion: See Appendix A, Page S&T-A84.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>No comments were heard on this item. The committee recommends this item be designated with Developing status.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-15 **Appendix D – Definitions: fifth-wheel, official grain samples, ~~transfer standard~~ and standard, field (See related items New-6 through New-14)**

Source:
NIST OWM (2018)

Purpose:
To remove the current limited definition and use of the term “Transfer Standard” and eliminate terms “Testing Standards”, “Verification (Testing) Standards”, and instead use the term Field Standard, consistent with its reference in Handbook 44, Appendix A, Fundamental Considerations and its use in several sections of Handbook 44. To correct the broad use of the term Transfer Standard and instead replace its use with the term Field Standard. To update all use of the term “standard” to use the term “Field Standard”. To remove the current limited definition of Transfer Standard and instead use the term Field Standard.

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

fifth wheel. – A commercially-available distance-measuring device which, after calibration, is recommended for use as a field ~~transfer~~ standard for testing the accuracy of taximeters and odometers on rented vehicles. [5.53, 5.54]

(Amended 20XX)

official grain samples. – Grain or seed used by the official as the official ~~transfer~~ **field** standard from the reference standard method to test the accuracy and precision of grain moisture meters. [5.56(a), 5.56(b)]

(Amended 20XX)

~~**transfer standard.** – A measurement system designed for use in proving and testing cryogenic liquid-measuring devices. [3.38]~~

Standard, Field. – **A physical standard that meets specifications and tolerances in NIST Handbook 105-series standards (or other suitable and designated standards) and is traceable to the reference or working standards through comparisons, using acceptable laboratory procedures, and used in conjunction with commercial weighing and measuring equipment.**

(Added 20XX)

Background/Discussion: See Appendix A, Page S&T-A84.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>This Item was included as part of Batch 2 which includes items New-6 through New-15. A comment was heard suggesting the definition could cause issues categorizing several field standards into transfer standards when this is not always the case. The intention is a nice idea but incorrect to say that everything we use in the field is a transfer standard. The committee believes this item has merit but requires further Development by the submitter.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

New-27 Appendix D – Definitions: field reference standard meter and transfer standard
(See related items New-24 thru New-26)

Source:

Endress+Hauser Flowtec AG (2018)

Purpose:

Add definition field reference standard meter to HB 44. Delete transfer standard definition. Change terms in sections 3.34, 3.38 and 3.39.

Item under Consideration:

Amend NIST Handbook 44, Appendix D as follows:

field reference standard meter – A measurement system designed for use in proving and testing measuring devices and meters.

~~transfer standard – A measurement system designed for use in proving and testing cryogenic liquid measuring devices.~~

Background/Discussion: See Appendix A, Page S&T-A86.

NEWMA Report
<p>Regional recommendation to NCWM on item status:</p> <p> <input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda <input checked="" type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda <i>(To be developed by source of the proposal)</i> <input type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda <i>(In the case of new proposals, do not forward this item to NCWM)</i> </p>
<p>Comments and justification for the regional recommendation to NCWM: <i>(This will appear in NCWM reports)</i></p> <p>This item is part of Batch 3 which includes items New-24 through New-27. Comments were heard on all items. A comment was heard questioning whether this should not be considered a master meter. This item has merit but the committee feels it should remain Developing at this time.</p>

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

3600-5 D Appendix D – Definitions: Remote Configuration Capability

Source:

NIST office of Weights and Measures (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:

Modify the General Code by adding the following paragraph to address security for systems adjusted using removable media:

G-S.8.2. Devices and Systems Adjusted Using Removable Digital Storage Device. - For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, such as a secure digital (SD) card, USB flash drive, etc., security shall be provided for those parameters using an event logger in the device. The event logger shall 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. In addition to providing a printed copy of the information, the information may be made 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.)

(Added 20XX)

In addition to adding new paragraph G-S.8.2., exempt current sealing requirements from applying to devices and systems adjusted using a removable digital storage device by amending the sealing requirements in the following HB 44 code sections: 2.20., 2.21., 2.22., 2.24., 3.30., 3.31., 3.32., 3.33., 3.34., 3.35., 3.36., 3.37., 3.38., 3.39, 3.40., 5.55., 5.56.(a), and 5.58. This exemption is needed because the General Code paragraph being proposed will address the sealing of all device types and systems that can be adjusted using a removable digital storage device. The following additional changes are proposed to provide the exemption noted:

2.20. Scales Code

S.1.11. Provision for Sealing.

S.1.11.1 Devices and Systems Adjusted Using a Removable Digital Storage Device. - For devices and systems in which the calibration or configuration parameters, as defined in Appendix D, can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2.

S.1.11.2 All Other Devices.- Except on Class I scales and devices specified in S.1.11.1. the following provisions for sealing applies:

(a) *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 an electronic device.*

[Nonretroactive as of January 1, 1979]

(b) *A device shall be designed with provision(s) for applying a security seal that must be broken, or for using other approved means of providing security (e.g., data change audit trail available at the time of inspection), before any change that detrimentally affects the metrological integrity of the device can be made to any electronic mechanism.*

[Nonretroactive as of January 1, 1990]

- (c) *Audit trails shall use the format set forth in Table S.1.11.
[Nonretroactive as of January 1, 1995]*

A device may be fitted with an automatic or a semi-automatic calibration mechanism. This mechanism shall be incorporated inside the device. After sealing, neither the mechanism nor the calibration process shall facilitate fraud.

(Amended 1989, 1991, 1993, and **20XX**)

2.21. Belt-Conveyor Scale Systems Code

S.5. Provision for Sealing. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For all other devices, the following provisions for sealing apply:

A device shall be designed using the format set forth in Table S.5. with provision(s) for applying a security seal that must be broken, or for using other approved means of providing security (e.g. data change audit trail available at the time of inspection), before any change that affects the metrological integrity of the device can be made to any electronic mechanism.

[Nonretroactive as of January 1, 1999]

(Added 1998) (**Amended 20XX**)

2.22 Automatic Bulk Weighing Systems

S.1.6. Provision for Sealing Adjustable Components on Electronic Devices. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, pProvision 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.

(Amended 20XX)

2.24 Automatic Weighing Systems

S.1.3. Provision for Sealing.

- (a) **Automatic Weighing Systems, Except Automatic Checkweighers. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2.**

For parameters adjusted using other means, a device shall be designed with provision(s) as specified in Table S.1.3. Categories of Device and Methods of Sealing for applying a security seal that must be broken, or for using other approved means of providing security (e.g., data change audit trail available at the time of inspection), before any change that detrimentally affects the metrological integrity of the device can be made to any electronic mechanism.

- (b) **For Automatic Checkweighers. –** Security seals are not required in applications where it would prohibit an authorized user from having access to the calibration functions of a device.

(Amended 20XX)

3.30 Liquid Measuring Devices

S.2.2. Provision for Sealing. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or for physically applying a security seal in such a manner that requires the security seal to be broken before an adjustment or interchange can be made of:

- (a) any measuring or indicating element;
- (d) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries; and
- (e) any metrological parameter that will affect the metrological integrity of the device or system.

When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

*[Audit trails shall use the format set forth in Table S.2.2.]**

*[*Nonretroactive and Enforceable as of January 1, 1995]*

(Amended 1991, 1993, 1995, 2006, and **20XX**)

3.31. Vehicle-Tank Meters

S.2.2. Provision for Sealing. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or for physically applying a security seal in such a manner that requires the security seal to be broken before a change or an adjustment or interchange may be made of:

- (a) any measuring or indicating element;
- (b) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries; and
- (c) any metrological parameter that will affect the metrological integrity of the device or system.

When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

*[Audit trails shall use the format set forth in Table S.2.2. Categories of Device and Methods Sealing.]**

*[*Nonretroactive as of January 1, 1995]*

(Amended 2006 **and 20XX**)

3.32. LPG and Anhydrous Ammonia Liquid-Measuring Devices

S.2.2. Provision for Sealing. For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or for physically applying a security seal in such a manner that requires the security seal to be broken before an adjustment or interchange may be made of:

- (a) any measuring or indicating element;
- (b) any adjustable element for controlling delivery rate, when such rate tends to affect the accuracy of deliveries; and
- (c) any metrological parameter that will affect the metrological integrity of the device or system.

When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

*[Audit trails shall use the format set forth in Table S.2.2. Categories of Device and Methods of Sealing.]**

*[*Nonretroactive as of January 1, 1995]*

(Amended 2006 **and 20XX**)

3.33. Hydrocarbon Gas Vapor-Measuring Devices

S.2.2. Provision for Sealing. For devices or systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

Adequate provision shall be made for applying security seals in such a manner that no adjustment or interchange may be made of any measurement element.

(Amended 20XX)

3.34. Cryogenic Liquid-Measuring Devices

S.2.5. Provision for Sealing. – For devices or systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or for physically applying a security seal in such a manner that requires the security seal to be broken before an adjustment or interchange may be made of:

- (a) any measuring or indicating element;
- (b) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries;

- (c) any automatic temperature or density compensating system; and
- (d) any metrological parameter that will affect the metrological integrity of the device or system.

When applicable, any adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

[Audit trails shall use the format set forth in Table S.2.5. Categories of Device and Methods of Sealing]*[*Nonretroactive as of January 1, 1995]

(Amended 2006 **and 20XX**)

3.35. Milk Meters

S.2.3. Provision for Sealing. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or for physically applying a security seal in such a manner that requires the security seal to be broken before an adjustment or interchange may be made of any:

- (a) measuring element or indicating element;
- (b) adjustable element for controlling delivery rate, when such rate tends to affect the accuracy of deliveries; and
- (c) metrological parameter that will affect the metrological integrity of the device or system.

When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

[Audit trails shall use the format set forth in Table S.2.3. Categories of Device and Methods of Sealing]*
[*Nonretroactive as of January 1, 1995]

(Amended 2006 **and 20XX**)

3.36. Water Meters

S.2.1. Provision for Sealing. – For devices or systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

Adequate provision shall be made for applying security seals in such a manner that no adjustment or interchange may be made of:

- (a) any measurement elements; and
- (b) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries.

The adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

(Amended 20XX)

3.37. Mass Flow Meters

S.3.5. Provision for Sealing. – For devices or systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or physically applying security seals in such a manner that no adjustment or interchange may be made of:

- (a) any measuring or indicating element;
- (b) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries;
- (c) the zero adjustment mechanism; and
- (d) any metrological parameter that will affect the metrological integrity of the device or system.

When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

*[Audit trails shall use the format set forth in Table S.3.5. Categories of Device and Methods of Sealing]**
*[*Nonretroactive as of January 1, 1995]*

(Amended 1992, 1995, 2006, and **20XX**)

3.38. Carbon Dioxide Liquid-Measuring Devices

S.2.5. Provision for Sealing. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or for physically applying a security seal in such a manner that requires the security seal to be broken before an adjustment or interchange may be made of:

- (a) any measuring or indicating element;
- (b) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries;
- (c) any automatic temperature or density compensating system; and
- (d) any metrological parameter that will affect the metrological integrity of the device or system.

When applicable any adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

*[Audit trails shall use the format set forth in Table S.2.5. Provision for Sealing]**

*[*Nonretroactive as of January 1, 1995]*

(Amended 2006 **and 20XX**)

3.39. Hydrogen Gas-Measuring Devices – Tentative Code

S.3.3. Provision for Sealing. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or physically applying security seals in such a manner that no adjustment may be made of:

- (a) each individual measurement element;
- (b) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries;
- (c) the zero adjustment mechanism; and
- (d) any metrological parameter that detrimentally affects the metrological integrity of the device or system.

When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal. Audit trails shall use the format set forth in Table S.3.3. Categories of Device and Methods of Sealing.

(Amended 20XX)

3.40. Electric Vehicle Fueling Systems – Tentative Code

S.3.3. Provision for Sealing. – For devices or systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or physically applying security seals in such a manner that no adjustment may be made of:

- (a) each individual measurement element;
- (b) any adjustable element for controlling voltage or current when such control tends to affect the accuracy of deliveries;
- (c) any adjustment mechanism that corrects or compensates for energy loss between the system and vehicle connection; and
- (d) any metrological parameter that detrimentally affects the metrological integrity of the EVSE or system.

When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal. Audit trails shall use the format set forth in Table S.3.3. Categories of Device and Methods of Sealing.

(Amended 20XX)

5.55. Timing Devices

S.4. Provisions for Sealing. – For devices or systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, Adequate provisions shall be made to provide security for the timing element.

(Added 2015) (Amended 20XX)

5.56.(a) Grain Moisture Meters

S.2.5. Provision for Sealing. – For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

Provision shall be made for applying a security seal in a manner that requires the security seal to be broken, or for using other approved means of providing security (e.g., audit trail available at the time of inspection as defined in Table S.2.5. Categories of Device and Methods of Sealing) before any change that affects the metrological integrity of the device can be made to any mechanism.

(Amended 20XX)

5.58. Multiple Dimension Measuring Devices

S.1.11. Provision for Sealing. - For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

- (a) ~~A~~ **The device or system** shall be designed with provision(s) for applying a security seal that must be broken, or for using other approved means of providing security (e.g., data change audit trail available at the time of inspection), before any change that detrimentally affects the metrological integrity ~~of the device~~ can be made to any measuring element.
- (b) Audit trails shall use the format set forth in Table S.1.11. Categories of Devices and Methods of Sealing for Multiple Dimension Measuring Systems.

(Amended 20XX)

Background/Discussion: See Appendix A, Page S&T-A86.

NEWMA Report
Regional recommendation to NCWM on item status:
<input type="checkbox"/> Recommend as a Voting Item on the NCWM agenda <input type="checkbox"/> Recommend as an Information Item on the NCWM agenda

- | |
|--|
| <input type="checkbox"/> Recommend as a Developing Item on the NCWM Agenda (<i>To be developed by source of the proposal</i>)
<input checked="" type="checkbox"/> Recommend Withdrawal of the Item from the NCWM Agenda (<i>In the case of new proposals, do not forward this item to NCWM</i>) |
|--|

Comments and justification for the regional recommendation to NCWM: (<i>This will appear in NCWM reports</i>)
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Eric Golden (SMA) The SMA opposes this item. A comment was made that the title causes confusion as it states these are Appendix D definitions when the content of the item actually proposes changes to several codes. The committee recommends this item be withdrawn.

Additional letters, presentation and data may have been submitted for consideration with this item. Please refer to <https://www.ncwm.net/meetings/interim/publication-15> to review these documents.

Mr. Brad Bachelder, Maine | Committee Chair
Mr. Jim McEnerney, Connecticut | Member
Mr. Jim Willis, New York | Member
Mr. Kevin Mikoski, Irving Oil | Associate Membership Representative

Specifications and Tolerances Committee