

## **Addendum Sheet**

### **Specifications and Tolerances (S&T) Committee Interim Report**

Mr. Ivan Hankins, Committee Chair  
Iowa

#### **INTRODUCTION**

The S&T Committee (hereinafter referred to as the “committee”) submits its Committee Interim Report for consideration by National Conference on Weights and Measures (NCWM). This addendum sheet contains the report items published in *NCWM Publication 16, Committee Reports for the 103<sup>rd</sup> Annual Meeting*. The addendum sheet will address the following items during the Annual Meeting.

Items are grouped according to item status: **(VC) Voting Consent Calendar:** the committee has grouped these items for a single vote; **(V) Voting Item:** the committee is making recommendations requiring a vote by the active members of NCWM; **(I) Informational Item:** the item is under consideration by the committee but not proposed for Voting; **(A) Assigned Item:** the committee has assigned development of the item to a recognized subcommittee or task group within NCWM; **(D) Developing Item:** the committee determined the item has merit; however, the item was returned to the submitter or other designated party for further development before any action can be taken at the national level; **(W) Withdrawn Item:** the item has been removed from consideration by the committee.

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**Details of All Items**  
*(In order by Reference Key)*

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**BLOCK 1 ITEMS (B1)      MANIFOLD FLUSH SYSTEMS**

**B1: GEN-1    W    G-S.2. Facilitation of Fraud.**

No changes.

**B1: VTM-1    VC    S.3. Diversion of Measured Liquid and UR.2.6. Clearing the Discharge Hose.**

The Committee heard comments from OWM that this item needed some additional work to address some concerns that had been identified. In discussing the changes OWM felt were needed with the submitter, it was agreed that some of the changes would be considered editorial and others technical. Consequently, OWM offered two courses of action for the Committee to consider as follows:

1. Downgrade the item to Informational to allow time to address all the changes that are needed; or
2. Split the item into two parts to allow the portion of the item needing only editorial changes to move forward for vote; and carryover the remaining portion to allow time for it to be further developed and considered during the next NCWM cycle.

The Committee also heard comments from the submitter who agreed with the changes OWM had identified. Rather than hold up the entire item to be considered in the next Conference cycle, the submitter requested the item be split into two parts to allow the completed portion, including the editorial changes, to move forward for vote.

A concern raised by one state official was that proposed paragraph S.3.1.1. would necessitate allowing metering systems with multiple compartments to deliver multiple products through a single discharge hose. Such systems are currently prohibited in the state. The Committee considered this concern but did not believe the changes that had suggested by OWM and the submitter to amend paragraph S.3.1.1. would cause such an outcome.

The Committee agreed to split the item into two parts as requested by the submitter as shown below in parts 1 and 2. Part 1 represents the portion of the item that is to be voted on, including the editorial changes OWM identified as needing to be completed. Part 2 represents the portion of the current proposal that the Committee agreed to carryover on its agenda to be considered during the 2019 NCWM Conference cycle.

**PART 1 (VOTING)**

Modify paragraph S.3.1. as follows:

**S.3.1. Diversion of Measured Liquid. – ~~Except on equipment used exclusively for fueling aircraft,~~ ~~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~~ ensure that:**

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

**This paragraph does not apply to the following:**

- 1) **Equipment used exclusively for fueling aircraft.**
- 2) **Multiple-product, single discharge hose metering systems that are equipped with systems designed to flush the discharge hose, provided the flushing system complies with the provisions of paragraph S.3.1.1.**

Add a new paragraph S.3.1.1. as follows:

**S.3.1.1. Means for Clearing the Discharge Hose. Metering systems may be equipped with systems specifically designed to facilitate clearing of the discharge hose prior to delivery to avoid product contamination. In such systems, a valve to temporarily divert product from the measuring chamber of the meter to a storage tank, shall be installed only if:**

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

**(Added 20XX)**

Add a new paragraph heading UR.2.6. and new paragraph UR.2.6.1. as follows:

**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)**

**PART 2 (CARRYOVER to 2019)**

Assuming the proposed changes outlined in Part 1 above are adopted, the following additional changes are proposed for consideration in the next Conference cycle. These changes are intended to ensure that such systems are designed such that they do not facilitate fraud; help ensure owners understand their responsibilities when installing such a

system; and ensure uniformity in enforcement throughout the country. The following includes changes to the proposal in OWM's analysis of this item to reflect comments received from the MMA and others during the 2018 NCWM Annual Meeting. The submitter and OWM will welcome comments as this item is further developed.

Modify paragraph S.3.1.1. as follows:

**S.3.1.1. Means for Clearing the Discharge Hose.** - Metering systems may be equipped with systems specifically designed to facilitate clearing of the discharge hose prior to delivery to avoid product contamination. In such systems, a valve to temporarily divert product from the measuring chamber of the meter to a storage tank, shall be installed only if:

- (a) The discharge hose remains of the wet hose type; and
- (b) the valve and associated piping are approved by the weights and measures authority having jurisdiction over the device prior to commercial use; and
- (c) the valve is permanently marked with its purpose (e.g., flush valve); and
- (d) the valve is installed in a conspicuous manner and as far from the hose reel as practical; and
- (e) the system clearly and automatically indicates the direction of product flow during operation of the flush system; and
- (f) clear means, such as an indicator light or audible alarm, is used to identify when the valve is in use **on both quantity indications and any associated recorded representations (e.g., using such terms such as "flushing mode" or "not for commercial use); and**
- (g) **effective automatic means shall be provided to prevent passage of liquid through any such flush system during normal operation of the measuring system; and**
- (h) no hoses or piping are connected to the inlet when it is not in use.

Add a new paragraph UR.2.6.1. as follows and renumber paragraph UR.2.6.1. (assuming new paragraph UR.2.6.1. is adopted as shown in Part 1 above) as follows:

#### UR.2.6. Clearing the Discharge Hose

**UR.2.6.1. Clearing the Discharge Hose, General. - A manifold flush or similar system designed to assist in flushing product between deliveries is not to be used or operational during a commercial transaction. The inlet valves for the system are not to be connected to any hose or piping (dust covers are permitted) when not in use. When the flushing system is in operation, the discharge hose is only to be connected to the port for the product type being flushed from the discharge line. Following the flushing process, indications and recording elements must be reset to zero prior to beginning a commercial delivery.**

(Added 20XX)

**UR.2.6.2.** 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)

## BLOCK 2 ITEMS (B2)

## DIVISION SIZE AND TOLERANCES FOR IN-MOTION RAILWAY SYSTEMS

**B2: SCL-1 D Table 3, Parameters for Accuracy Classes**

The Committee heard comments from the submitter that this block of items was still being developed and it is hoped that a proposal would be completed and available for Committee consideration at the 2019 NCWM Interim Meeting.

**B2: SCL-2 D T.N.3.6. Coupled-in-Motion Railroad Weighing Systems**

See B2: SCL-1

**BLOCK 3 ITEMS (B3) SUMMING OF INDIVIDUAL WEIGHING/MEASURING ELEMENTS**

**B3: SCL-3 W Table 3, Parameters for Accuracy Classes**

This block of items has been withdrawn.

**B3: OTH-1 W Appendix A – Fundamental Considerations: Section 4.4. General Considerations**

This block of items has been withdrawn.

**BLOCK 4 ITEMS (B4) TERMINOLOGY FOR TESTING STANDARDS**

**B4: SCL-4 D N.2. Verification (Testing) Standards**

The Committee heard an update from the submitter that this block of items was still being developed. The Committee agreed to maintain a developing status on all items in this block to allow the submitter time to complete its work.

**B4: ABW-1 D N.2. Verification (Testing) Standards**

No changes.

**B4: AWS-1 D N.1.3. Verification (Testing) Standards, N.3.1. Official Tests, UR.4. Testing Standards**

No changes.



**B4: CLM-1 D N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards**

No changes.

**B4: CDL-1 D N.3.2. Transfer Standard Test, T.3. On Tests Using Transfer Standards**

No changes.

**B4: HGM-1 D N.4.1. Master Meter (Transfer) Standard Test, T.4. Tolerance Application on Test Using Transfer Standard Test Method**

No changes.

**B4: GMM-1 D 5.56(a): N.1.1. Air Oven Reference Method Transfer Standards, N.1.3. Meter to Like-Type Meter Method Transfer Standards and 5.56(b): N.1.1. Transfer Standards, T. Tolerances<sup>1</sup>**

No changes.

**B4: LVS-1 D N.2. Testing Standards**

No changes.

**B4: OTH-2 D Appendix A: Fundamental Considerations, 3.2. Tolerances for Standards, 3.3. Accuracy of Standards**

No changes.

**B4: OTH-3 D Appendix D – Definitions: fifth-wheel, official grain samples, ~~transfer standard~~ and Standard, Field**

No changes.

**BLOCK 5 ITEMS (B5) DEFINE “FIELD REFERENCE STANDARD”**

**B5: CLM-2 D N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards**

The Committee heard an update from the submitter that this block of items is fully developed. The submitter commented he hoped to have additional information to present at the 2019 NCWM Interim Meeting. The Committee agreed to maintain a developing status on all items in this block and looks forward to the submitters update at that meeting.

**B5: CDL-2 D N.3.2. Transfer Standard Test and T.3. On Tests Using Transfer Standards**

No changes.

**B5: HGM-2 D N.4.1. Master Meter (Transfer) Standard Test and T.4. Tolerance Application on Test Using Transfer Standard Test Method**

No changes.

**B5: OTH-4 D Appendix D – Definitions: field reference standard meter and ~~transfer standard~~**

No changes.

**BLOCK 6 ITEMS (B6) ALIGN VAPOR ELIMINATION REQUIREMENTS AMONG CODES**

**B6: LPG-1 VC S.2.1. Vapor Elimination. (See related items New-17 and New-18)**

The Committee heard comments in support of this block of items because they are fully developed and would harmonize the vapor elimination requirements in these codes with other measuring codes in HB-44. The Committee agrees and recommends these items for vote.

**B6: CLM-3 VC S.2.1. Vapor Elimination.**

No changes.

**B6: CDL-3 VC S.2.1. Vapor Elimination.**

No changes.

**BLOCK 7 ITEMS (B7) ADDRESS DEVICES AND SYSTEMS ADJUSTED USING A  
REMOVABLE DIGITAL STORAGE DEVICE**

**B7: GEN-2 D G-S.8.2. Devices and Systems Adjusted Using Removable Digital Device Storage**

OWM commented during Committee open hearings that following the 2018 NCWM Interim meeting, it received an inquiry from a meter manufacturer asking if connecting a laptop computer via cable to configure the device would be considered removable media? It was not OWM's intention that proposed new paragraph G-S.8.2. apply to a device or system that can be adjusted using a laptop that gets attached to a device to make configuration changes and then disconnected once those changes have been completed. The intent is that the paragraph apply only to those devices and systems in which a removable digital storage device must remain in the device (or system) in order for it to be operational. To address this new concern and better clarify the application of G-S.8.2., OWM recommended the following changes (i.e., the shaded text) to this item in the block:

**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 either (1) an event logger in the device; or (2) a physical seal that must be broken in order to remove the digital storage device from the device (or system). If security is provided using an event logger, 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.)**

**\*Applies only to removable digital storage devices that must remain in the device or system for it to be operational.**

**(Added 20XX)**

The Committee agreed that the changes proposed to paragraph G-S.8.2. better clarify the application of the paragraph and agreed to amend the paragraph accordingly.

**B7: SCL-5 D S.1.11. Provision for Sealing.**

No changes.

**B7: BCS-1 D S.5. Provision for Sealing.**

No changes.

**B7: ABW-2 D S.1.6. Provision for Sealing Adjustable Components on Electronic Devices.**

No changes.

**B7: AWS-2 D S.1.3. Provision for Sealing.**

No changes.

**B7: LMD-1 D S.2.2. Provision for Sealing.**

No changes.

**B7: VTM-2 D S.2.2. Provision for Sealing.**

No changes.

**B7: LPG-2 D S.2.2. Provision for Sealing.**

No changes.

**B7: HGV-1 D S.2.2. Provision for Sealing.**

No changes.

**B7: CLM-4 D S.2.5. Provision for Sealing.**

No changes.

**B7: MLK-1 D S.2.3. Provision for Sealing.**

No changes.

**B7: WTR-1 D S.2.1. Provision for Sealing.**

No changes.

**B7: MFM-1 D S.3.5. Provision for Sealing.**

No changes.

**B7: CDL-4 D S.2.5. Provision for Sealing.**

No changes.

**B7: HGM-3 D S.3.3. Provision for Sealing.**

No changes.

**B7: EVF-1 D S.3.3. Provision for Sealing.**

No changes.

**B7: TIM-1 D S.4. Provision for Sealing.**

No changes.

**B7: GMM-2 D S.2.5. Provision for Sealing.**

No changes.

**B7: MDM-1 D S.1.11. Provision for Sealing.**

No changes.

**GEN – GENERAL CODE**

**GEN-3 A G-A.1. Commercial and Law-Enforcement Equipment, and G-S.2. Facilitation of Fraud.**

The Committee heard an update from the chairman of the Skimmer Task Group. Work is ongoing and Committee looks forward to continued updates on this item.

**SCL – SCALES**

**SCL-6 VC S.1.2.2.3. Deactivation of a “d” Resolution**

The Committee heard comments in support and in opposition to this item. The Committee believes this item is of added benefit to making officials and service technicians aware of a possible rounding error in Class I and II scales. The Committee agreed to present this item for vote.

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

The Committee heard numerous comments from the submitters and others recommending this item be assigned to a work group. The Committee agrees this is an important issue and will formally request this item be assigned to a task group for development. The Committee recommends the TG include regulatory officials, food marketing, OWM, and other stakeholders.

**SCL-8            A    Sections Throughout the Code to Include Provisions for Commercial Weigh-in-Motion Vehicle Scale Systems**

The Committee heard numerous comments in support of an assigned status on this item and the need for the submitter to provide comparison test data to support its claim that its WIM vehicle scale system can comply with the tolerances specified in the proposal. It was also suggested by many that the Committee keep the TG intact to assist in developing the testing protocol for collecting comparison data.

During the Committee's work session, members of the Committee agreed it is important for the TG to develop the testing protocol to be used to collect the comparison test data. Rinstrum agreed to provide the data required by the Committee by the 2019 NCWM Interim meeting. Rinstrum also requested Committee involvement in collection of the comparison test data. In consideration of the comments received, the Committee agreed to change the status of the item from voting to assigned.

**ABW – AUTOMATIC BULK WEIGHING SYSTEMS**

**ABW-3            D    A. Application, S Specifications, N. Notes, UR. User Requirements**

No changes.

**ABW-4            V    A. Application and Appendix D: Definitions – batching system**

The Committee heard comments in support and in opposition to this item. The Committee believes this item is fully developed and ready for vote.

**LMD – LIQUID MEASURING DEVICES**

**LMD-2 VC 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**

The Committee heard comments from the submitter of this item that the proposed retroactive date specified beneath paragraph UR.3.4. in the proposal should be changed to nonretroactive to avoid confusion and requested the Committee consider amending it accordingly. OWM commented that the change proposed by the submitter would align the nonretroactive dates proposed in paragraph S.1.6.7. and S.1.6.8. with the change proposed to paragraph UR.3.4.

The Committee agreed to amend paragraph UR.3.4. of the proposal to reflect the paragraph is to be nonretroactive instead of retroactive as requested by the submitter. The following reflects the changes agreed to by the Committee:

**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) \*(Nonretroactive as of Retroactive January 1, 2021)

**LPG – LPG AND ANHYDROUS AMMONIA LIQUID-MEASURING DEVICES**

**LPG-3 D S.2.5. Zero-Set-Back Interlock, Stationary and Vehicle Mounted Meters, Electronic**

No changes. The Committee did not receive an update on this item by the submitter.

**LPG-4 D N.3. Test Drafts.**

No changes. The Committee heard an update on this item by the submitter, who reported the item was fully developed.

**LPG-5 D N.4.1.2. Repeatability Tests and N.4.2.4. Repeatability Tests for Type Evaluation**

The Committee heard an update on this item by the submitter, who reported he is continuing to develop this item and hopes to have it fully developed by next year.

**WTR-2 VC S.2.1. Provision for Sealing and Table S.2.1. Categories of Device and Methods of Sealing**

The Committee heard comments from OWM and Mr. Kurt Floren (LA County, CA) on behalf of the submitter. OWM identified nonretroactive dates appearing in Table S.2.1., which conflict with the proposed date specified beneath paragraph S.2.1. It was agreed that the enforcement dates of all portions of Table S.2.1. should coincide with the nonretroactive date in paragraph S.2.1. OWM suggested, and Mr. Floren, speaking on behalf of the

submitter agreed, that the incorrect nonretroactive dates appearing in the table should be deleted and a single correct nonretroactive date added beneath the table.

In consideration of the comments received on this item, the Committee agreed to amend the table as suggested and present this item for vote. The following reflects all the changes agreed to by the Committee:

**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.]\***

**[\*Nonretroactive as of January 1, 2019]**



<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>
<p><u>Category 2: Remote configuration capability, but access is controlled by physical hardware.</u></p> <p><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></p>	<p><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><sup>†*</sup></p> <p><u>†*Nonretroactive as of January 1, 1996†</u></p>
<p>Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</p> <p><u>[Nonretroactive as of January 1, 1995]</u></p> <p>The device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode or shall not operate while in this mode.</p> <p><u>[Nonretroactive as of January 1, 2001]</u></p>	<p>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter. A printed copy of the information must be available on demand through the device or through another on-site device. The information may also be available electronically. The event logger shall have a capacity to retain records equal to 10 times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</p>

[Nonretroactive as of January 1, 2019]  
(Added 20XX)

## MFM – MASS FLOW METERS

MFM-2      D    N.3. Test Drafts.

No changes. The Committee heard an update on this item by the submitter, who reported the item was fully developed.

## **TXI – TAXIMETERS**

### **TXI-1 VC S.1.2.2. Distance Mechanism and S.1.5.3. Distance Not Recording.**

No changes. The Committee heard comments from the submitter that there has been no opposition received on this item.

## **OTH – OTHER ITEMS**

### **OTH-5 D Electric Watthour Meters Code under Development**

No changes. The Committee heard an update from the submitter and looks forward to the continued development of this item.

### **OTH-6 D Appendix D – Definitions: Batch (Batching)**

No changes. The submitter did not provide an update on this item.



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Mr. Ivan Hankins, Iowa | Committee Chair  
Mr. Joseph Eccleston, Maryland | Member  
Ms. Rachelle Miller, Wisconsin | Member  
Mr. Josh Nelson, Oregon | Member  
Mr. Brad Bachelder, Maine | Member  
Mr. Luciano Burtini, Measurement Canada | Canadian Technical Advisor  
Mr. Rick Harshman, NIST, OWM | NIST Technical Advisor  
Mr. Darrell Flocken, NCWM | NTEP Technical Advisor

## **Specifications and Tolerances Committee**