# NTEP - Measuring Sector
# Meeting Summary
## Held in conjunction with the Software Sector

September 19, 2023, 8:00 am to 5:00 pm CDT and September 20, 2023, 8:00 am to 5:00 pm CDT
(September 20th 1:00 pm to 5:00 pm will be a joint meeting with the Software Sector)
Drury Plaza Hotel Milwaukee Downtown, Milwaukee, Wisconsin

| Glossary of Acronyms | | | |
|---|---|---|---|
| CC | Certificate of Conformance | NTETC | National Type Evaluation Technical Committee |
| DMS | Division of Measurement Standards | OIML | International Organization of Legal Metrology |
| ECR | Electronic Cash Register | OWM | Office of Weights and Measures (NIST) |
| EVFS | Electric Vehicle Fueling Systems | PD | Positive Displacement |
| HB 44 | NIST Handbook 44 "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices" | Pub 14 | NCWM Publication 14 |
| LMD | Liquid Measuring Devices | RMFD | Retail Motor-Fuel Dispenser |
| mA | Milliamp | SI | International System of Units |
| MFM | Mass Flow Meters | S&T | Specifications and Tolerances |
| NCWM | National Conference on Weights and Measures | TG | Task Group |
| NIST | National Institute of Standards and Technology | VTM | Vehicle Tank Meter |
| NTEP | National Type Evaluation Program | W&M | Weights and Measures |
| This glossary is meant to assist the reader in the identification of acronyms used in this agenda and does not imply that these terms are used solely to identify these organizations or technical topics. | | | |

# Carry-over Items:

## 1. Permanence of ID Badge

**Source:** California NTEP Laboratory

**Background:** It was noted that the Permanence section of Pub 14 LMD does not include anything about leaving a "footprint or destroys itself" when attempting to remove an ID badge. It is necessary to point out that in Publication 14 under Checklists and Test Procedures for Common Specific Code Requirements, item 1.11 on page LMD-23, it states "1.1. The identification badge must be permanent". However, it offers no method to confirm this requirement.

The question to the membership is weather some guidance should be added to the Checklist for testing the permanence of the attachment of the badge.

**Recommendation:** No specific recommendation is being offered, however, if the members agree that there should be something in the Checklist, I offer the following extract from the 2022 edition of the Publication 14, Checklist for Digital Electronic Scales,

> **Permanence of Attachment of Badge**
> Attempt to remove the badge by pulling it off or prying off a metal badge that is attached using only adhesive; removal must be "difficult" at all temperatures. If the badge can be removed, it must show obvious evidence that the badge was removed. Acceptable indications are destruction of the badge by tearing, permanent and extensive wrinkling, or repeated exposure of the word "VOID" upon removal of the badge.

**During the 2022 MS Meeting**, this item identified that Pub 14, Measuring Devices has no specific requirement to the permanence of the ID label/tag/plate to the device. The Pub does mention the need for permanence but provides no guidance as to how compliance is determined. Clearly, data tags or plates made from metal that are riveted onto the device satisfy the permeance requirement. However, some devices use an adhesive to attach the label/tag/plate to the device. The membership agreed that there needs to be something that ensures compliance to prevent the fraudulent removal and reuse of labels.

Darrell offered an extract from Pub 14 for Weighing Devices as a possible test that could be added to Pub 14 for Measuring Devices. However, this discussion expanded into the requirement of not only the permanence of the label/tag/plate to the device but to the permanence of the information applied to the label/tag/plate. Pub 14, Measuring Devices does reference GS.1 and GS.7 (found on page LMD-20 of the 2022 edition of the Pub) which states what information needs to be on the label and does reference legibility and obliteration requirements, but Pub 14 provides no guidance on how to test compliance.

Seeing that the topic grew larger than the suggestion offered in the agenda, and the members agreed that no changes to Handbook 44 were needed, however, the idea had merit. Darrell suggested that the item remains as a carryover item for the 2023 meeting and he would continue to develop the recommendation. Tina, Craig, Brent, Michael, and Marc agree to review the proposal ahead of the 2023 meeting to help move the proposal forward.

**Discussion:** This was a Carry-over item from 2022. The group discussed this at length. Manufacturers use riveted metal tags and vinyl or metallic adhesive labels. One member discussed rigorous UL testing for labels used in RMFD. Rubbing Bon Ami test by NTEP mentioned as failure. We spoke of MC requirements similar to NTEP weighing. Darrell mention weigh aligns with MC language. We read the content from the Weighing section of Pub 14. Deformation or destruction of the label is a separate discussion. We reviewed the perm of marking and perm of label from weighing content in Pub 14.

Below is resulting language the Sector agreed upon to add to page LMD 20 replacing 2nd paragraph under heading "Markings:".

***The information may be on a metal or plastic plate that is attached with pop rivets, adhesive, or other means, but removable bolts or screws are not permitted.***

***A foil or vinyl badge may be used provided that it is able to survive wear and tear, remains legible, and is difficult to remove. If the badge can be removed, it must show obvious evidence that the badge was removed. Acceptable indications are destruction of the badge by tearing, permanent and extensive wrinkling, or repeated exposure of the word "VOID" upon removal of the badge.***

## 2. Permanence Test for A Stationary Analog Register

**Source:** 2022 NTEP Laboratory Meeting

**Background:** During an evaluation, the evaluator noted that Publication 14, LMD Checklist mentions the requirement for a permanence test of analog registers when installed and operated on a Vehicle Tank Meter but is silent if the register is installed in a stationary application.

The NTEP evaluators discussed this and concluded that the checklist should include the requirement of a permanence test for analog registers installed in a stationary application. The evaluators' reviewed the existing permanence testing requirements and agreed that the test should be for a length of 20 days.

A small group consisting of Randy Ramsey (NC NTEP Evaluator), Tina Butcher (NIST), and Darrell Flocken (NTEP Administrator) discussed this afterward and suggested that a proposal should be presented to the Measuring Sector Member

**Recommendation:** The NTEP Administrator developed the following proposal.

**Proposed change:** Change: (Pg LMD-119 of the 2022 edition of Pub 14. Measuring)

A. Laboratory and Field Evaluation – Electronic ~~Devices~~ **Indicating Element** and Software

(No other changes to paragraph A.)

**Add the following new information in its entirety.**

B. Laboratory and Field Evaluation – Analog Indicating Element Submitted Separate from a Measuring Element

**1. Use of Simulated Inputs:**

The use of simulated inputs is not accepted when evaluating analog indicating elements submitted separate from a measuring element.

**2. Field and Permanence Test of Analog Devices Subject to Evaluation:**

***Field Evaluations and Permanence Testing - General***

When necessary, permanence testing consists of conducting an initial test followed by a subsequent test. The device shall be used under conditions of normal use during the permanence period. The conditions of use and duration of the test shall be as agreed upon between the evaluating laboratory and the manufacturer.

A permanence test is required for all mobile analog "devices". The term "devices" refers to indicators/calculators, controllers, and registers. Permanence testing shall be conducted as follows to satisfy the permanence testing criteria for mobile analog devices.

During the permanence period, the device must perform, and function correctly and not be serviced.

***a. Mobile Analog Devices: ?should this be called a "Mobile Analog Indicating Device"?***

- **Initial Evaluation:**
  The device will be installed on a vehicle and testing according to the NTEP checklist criteria and performance requirements by the evaluating NTEP laboratory.

- **Permanence Period Requirements:**
  The device will be put into normal use for a period of 20-days under the following conditions:
  1. For each "day" of the 20-day period, the device must be used to make at least one delivery; each delivery shall consist of at least 10 gallons. It is not necessary for these days to be consecutive.
  2. There must be a minimum of 150 deliveries over the permanence period.
  3. The vehicle on which the electronic indicator/register is mounted shall travel at least 400 miles during the permanence period.

- **Subsequent Evaluation:**
  Following the defined permanence period, the device will be tested again by the evaluating NTEP laboratory to ensure the device continues to comply with applicable requirements.

***b. Stationary Analog Devices: ?should this be called a "Stationary Analog Indicating Device"?***

*Note: Analog indicating elements having been evaluated to the permanence tests for a mobile device, do not require stationary permanence testing to be used in a stationary application.*

- **Initial Evaluation:**
  The device will be installed on a vehicle and testing according to the NTEP checklist criteria and performance requirements by the evaluating NTEP laboratory.

- **Permanence Period Requirements:**
  The device will be put into normal use under the following conditions:
  1. Four test drafts for each flow rate
  2. A minimum of four flow rates shall be used with one being near minimum and one being near maximum as defined by the evaluation requirements for the meter it is going to be used with. If the analog device is intended to be across a range of meters, the testing will be expanded to include the flow rates of the additional meters.
  3. The analog device must be reset to zero between tests.

- **Subsequent Evaluation:**
  Following the defined permanence test, the device will be tested again by the evaluating NTEP laboratory to ensure the device continues to comply with applicable requirements.

Renumber all following items appropriately

**During the 2022 MS Meeting**, Michael (MS Chair) introduced this item and several comments were expressed that a permanence test for analog registers was an acceptable idea, however, the actual testing should be different than the tests for an electronic register. The reason for this is the analog register has moving parts where an electronic register does not. Following this idea, comments were heard that the test should consider items such as the number of gallons run during the test and should the test be conducted at maximum flow rates. Another comment heard was that the test should consider the maximum RPM of the register and/or the number of rotations of the leftmost digit.

Considering all of these comments, the membership suggested this item be maintained as a carryover item with the charge that Allen, Randy, Tina, and Darrell meet and further develop the item. It was suggested that the group develop a revised proposal and distribute it to the sector membership by January 1, 2023. Darrell agreed to take the lead in coordinating a meeting date for the individuals. The idea of having something developed and available to the members by January was only to give the individuals time to receive comments and possibility refine the proposal for discussion at the 2023 Measuring Sector meeting.

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**Discussion:**

This was a caveryover item from the 2022 meeting. Darrell spoke of discussing this with others early after the 2022 meeting, however, no additional action had been taken.

The members discussed the original intent of the item and the need for permanence testing of a Stationary Analog Device. This type of device is typically not submitted as a stand-alone device for NTEP certification testing, however, in the event that one is submitted, the members felt there should be a defined permanence test requirement.

The members reviewed the initial proposal from the 2022 meeting and felt that with some modification, the proposal could be accepted. Darrell agreed to modify the proposal based on the comments heard and would present a modified version the morning on the second meeting day. The changes made to the proposal were focused on the "Permanence Period Requirements" section for Stationary Analog Devices. The modified version was reviewed and agreed to by the Sector Members.

Following is the approved version of the proposal for inclusion into the 2024 edition of Publication 14.

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**Proposed change: (Revised)** Change: (Pg LMD-119 of the 2022 edition of Pub 14. Measuring)

A. Laboratory and Field Evaluation – Electronic ~~Devices~~ **Indicating Element** and Software

(No other changes to paragraph A.)

**Add the following new information in its entirety.**

B. Laboratory and Field Evaluation – Analog Indicating Element Submitted Separate from a Measuring Element

**1. Use of Simulated Inputs:**

The use of simulated inputs is not accepted when evaluating analog indicating elements submitted separate from a measuring element.

**2. Field and Permanence Test of Analog Devices Subject to Evaluation:**

***Field Evaluations and Permanence Testing - General***

When necessary, permanence testing consists of conducting an initial test followed by a subsequent test. The device shall be used under conditions of normal use during the permanence period. The conditions of use and duration of the test shall be as agreed upon between the evaluating laboratory and the manufacturer.

A permanence test is required for all mobile analog "devices". The term "devices" refers to indicators/calculators, controllers, and registers. Permanence testing shall be conducted as follows to satisfy the permanence testing criteria for mobile analog devices.

During the permanence period, the device must perform, and function correctly and not be serviced.

***a. Mobile Analog Indicating Element***

- **Initial Evaluation:**
  The device will be tested according to the NTEP checklist criteria and performance requirements by the evaluating NTEP laboratory.
- **Permanence Period Requirements:**
  The device will be put into normal use for a period of 20-days under the following conditions:
  1. For each "day" of the 20-day period, the device must be used to make at least one delivery; each delivery shall consist of at least 10 gallons. It is not necessary for these days to be consecutive.
  2. There must be a minimum of 150 deliveries over the permanence period.
  3. The vehicle on which the electronic indicator/register is mounted shall travel at least 400 miles during the permanence period.
- **Subsequent Evaluation:**
  Following the defined permanence period, the device will be tested again by the evaluating NTEP laboratory to ensure the device continues to comply with applicable requirements.

***b. Stationary Analog Indicating Element:***

*Note: Analog indicating elements having been evaluated to the permanence tests for a mobile device, do not require stationary permanence testing to be used in a stationary application.*

- **Initial Evaluation:**
  The device will be installed on a vehicle and testing according to the NTEP checklist criteria and performance requirements by the evaluating NTEP laboratory.
- **Permanence Period Requirements:**

The device will be put into normal use for a period of 20-days under the following conditions:

1. For each "day" of the 20-day period, the device must be used to make at least one delivery; each delivery shall consist of at least 10 gallons. It is not necessary for these days to be consecutive.
2. There must be a minimum of 150 deliveries over the permanence period.

- **Subsequent Evaluation:**
  Following the defined permanence test, the device will be tested again by the evaluating NTEP laboratory to ensure the device continues to comply with applicable requirements.

Renumber all following items appropriately

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# New Items:

## 3. Discussion of S&T Committee Agenda items that were adopted during the NCWM, 2023 Annual Meeting

3.1. GEN-23.1. G-N.3. Test methods

No action required.

3.2. LMD-23.1., LMD-23.2., LMD-23.4. N.3.5. Wholesale Devices

No action required.

3.3. VTM-18.1 S.3.1. Diversion of Measured Liquid and S.3.1.1. Means for Clearing the Discharge Hose and UR.2.6. Clearing the Discharge on a multiple-product, single discharge hose.

~~No action required.~~ Changes to Publication 14 were made based on the adopted wording if this item. See the reference to item 3.3. in the discussion notes at the end of this item

3.4. LPG-15.1. N.3. Test Drafts

No action required.

~~3.5. LPG-23.1. S.2.5. Zero-Set-Back-Interlock., S.2.5.2. Zero-Set-Back-Interlock for Stationary Customer-Operated Electronic Retail Motor-Fuel Devices.~~

~~No action required.~~

3.6. LPG-23.2. S.2.6. Automatic Timeout

Modify the code reference proceeding Checklist Item 29.13 as follows.

***S.2.6.1. Electronic Stationary (Other than Stationary Retail Motor-Fuel Dispensers)*** ~~***and Electronic Vehicle-Mounted Meters.***~~

Insert the following into the LMD Checklist

**Code Reference: S.2.6.3. Electronic Vehicle-Mounted Meters.**

29.15. For individual deliveries, if there is no product flow for five minutes the transaction must be completed before additional product flow is allowed. ☐ Yes ☐ No ☐ N/A

29.16. The five-minute timeout shall be sealable feature on an indicator. ☐ Yes ☐ No ☐ N/A

…Renumber remaining paragraphs

3.7. MFM-15.1. N.3. Test Drafts

No action required.

3.8. Block 1 (LMD-23.1 was moved to a Voting Item)

3.8.1. VTM-23.1. Test Drafts

No action required.

3.8.2. MLK-23.1. Test Drafts

No action required.

3.9. Block 4

3.9.1. GEN-21.2. 5.6. Recorded Representation

No action required.

3.9.2. LMD-21.2. S.1.6.5. Money Value Computations., UR.3. Use of a Device

Modify the following checklist items as shown below.

7.44.d. A ~~**printed**~~ receipt shall be available and shall include, at a minimum, the total price, quantity, and unit price.

Preceding paragraph 15.10., make the change shown below.

**Code References: S.1.6.7. Recorded Representations; and S.1.6.8. Recorded Representations for Transaction Where a Post-Delivery Discount(s) is Provided.**

Except for fleet sales and other price contract sales, for transactions conducted with point-of-sale systems or devices activated by credit cards, debit cards, or cash, a ~~**printed**~~ receipt containing information about the transaction shall be available to the customer as outlined in the following items. A printed receipt must always be available to the customer upon request and printing of the receipt may be initiated at the option of the customer. In addition, some systems may be equipped with the capability to issue an electronic receipt; for those systems, the customer may be given the option to receive the receipt electronically (e.g., via cell phone, computer, etc.). See also NCWM Publication 14, Code Reference: G-S.5.6. Recorded Representations.

Preceding paragraph 39.8., make the change shown below.

**Code References: S.1.6.7. Recorded Representations; and S.1.6.8. Recorded Representations for Transaction Where a Post-Delivery Discount(s) is Provided.**

Except for fleet sales and other price contract sales, for transactions conducted with point-of-sale systems or devices activated by credit cards, debit cards, or cash, a ~~**printed**~~ receipt containing information about the transaction shall be available to the customer as outlined in the following items. A printed receipt must always be available to the customer upon request and printing of the

receipt may be initiated at the option of the customer. In addition, some systems may be equipped with the capability to issue an electronic receipt; for those systems, the customer may be given the option to receive the receipt electronically (e.g., via cell phone, computer, etc.). See also NCWM Publication 14, Code Reference: G-S.5.6. Recorded Representations.

3.9.3. VTM-21.1. S.1.1. Primary Elements., UR.2. User Requirements

Modify the following checklist item as shown below.

**Code Reference: S.1.4.2. ~~Printed Ticket~~ Recorded Representation**

**32.20.** Any ~~**printed ticket**~~**recorded representation** with the total computed price indicated must also have clearly ~~**printed**~~**recorded** the total quantity delivered in terms of liters, gallons or kilograms, pounds and the appropriate fraction, and the unit price. ☐ Yes ☐ No ☐ N/A

3.9.4. LPG-21.1. S.1.1. Primary Elements., UR.2. User Requirements

Modify the following checklist item directly following checklist item 27.18.

**Code Reference: S.1.1.6. ~~Printed~~ Recorded Ticket**

Any ~~**printed ticket**~~**recorded representation** with the total computed price must also have clearly printed the total volume delivered in terms of gallons, cubic meters, or liters, and the appropriate fractions, and unit price.

Modify the following checklist item directly following checklist item 27.18.

**Code Reference: S.1.5.4. Recorded Representations; and S.1.5.5. Recorded Representations for Transactions Where a Post-Delivery Discount(s) is Provided.**

Except for fleet sales and other price contract sales, for transactions conducted with point-of-sale systems or devices activated by credit cards, debit cards, or cash, a ~~**printed receipt**~~**recorded representation** containing information about the transaction shall be available to the customer as outlined in the following items. A printed receipt must always be available to the customer upon request and printing of the receipt may be initiated at the option of the customer. In addition, some systems may be equipped with the capability to issue an electronic receipt; for those systems, the customer may be given the option to receive the receipt electronically (e.g., via cell phone, computer, etc.). See also NCWM Publication 14, Code Reference: G-S.5.6. Recorded Representations.

3.9.5. CLM-21.1. S.1.4.1. ~~Printed Ticket~~Recorded Representation., UR.2.6.3. ~~Printed Ticket~~Recorded Representation

Modify the checklist as follows. (CLMD-17)

**Code Reference: S.1.4.1. ~~Printed Ticket~~ Recorded Repesentation**

9.1. Any ~~**printed ticket**~~**recorded representation** with the total computed price indicated must also ~~**have**~~ clearly ~~**printed**~~**include** the total quantity delivered in terms of liters, gallons, kilograms, or cubic meters of gas, or cubic feet of gas and the appropriate fraction, and the unit price. ☐ Yes ☐ No ☐ N/A

3.9.6. MLK-21.1. S.1.4.2. ~~Printed Ticket~~Recorded Representation., UR.2.6.3. ~~Printed Ticket~~Recorded Representation

No action required.

3.9.7. MFM-21.2. S.6. ~~Printer~~Recorded Representations., UR.2.6. ~~Ticket Printer, Customer Ticket,~~ Recorded Representation., UR.3.4. ~~Printed Ticket.~~ Recorded Representation

Modify the checklist as follows (LMD-87)

**Code Reference: S.6. ~~Printer~~ Recording Element**

36.4. When an assembly is equipped with means for **~~printing~~recording** the measured quantity, the following conditions apply:

| | |
|---|---|
| (a) the scale interval shall be the same as that of the indicator; | ☐ Yes ☐ No ☐ N/A |
| (b) the value of the **~~printing~~recording** quantity shall be the same value as the indicated quantity, except that after January 1, 2021 the printed quantity shall also include mass value if mass is not the indicated quantity; | ☐ Yes ☐ No ☐ N/A |
| (c) a quantity for a delivery (other than an initial reference value) cannot be recorded until the measurement and delivery has been completed; | ☐ Yes ☐ No ☐ N/A |
| (d) the **~~printing~~recording** is returned to zero when the resettable indicator is returned to zero; and | ☐ Yes ☐ No ☐ N/A |
| (e) the **~~printing~~recording** values shall meet the requirements applicable to the indicated values. | ☐ Yes ☐ No ☐ N/A |

and

**Code Reference: S.6.1. ~~Printed Receipt~~ Recorded Repersentation**

43.1. **~~Any~~When a quantity is** delivered, **~~printed~~the recorded representation** quantity

| | |
|---|---|
| 43.1.1. Shall include an identification number. **AND** | ☐ Yes ☐ No ☐ N/A |
| 43.1.2. Shall include the time and date. **AND** | ☐ Yes ☐ No ☐ N/A |
| 43.1.3. Shall include the name of the seller. | ☐ Yes ☐ No ☐ N/A |

3.9.8. CDL-21.1. S.1.4.1. ~~Printed Ticket~~Recorded Representations., UR.2.4.2. ~~Tickets or Invoices.~~ Recorded Representation

No action required.

3.9.9. HGM-21.1. S.2.6. Recorded Representations, Point of Sale Systems., S.6. Printer. Recording Element., UR.3.2. Vehicle-mounted Measuring Systems Ticket Printer Recording Element., UR.3.3. Printed Ticket. Recorded Representation.

Modify the checklist as follows. (LMD-110)

**Code Reference: S.2.6. Recorded Representations, Point of Sale Systems**

43.1. A ~~**printed**~~ receipt shall be available for devices activated by debit cards, credit cards, and/or cash. The ~~**printed**~~ receipt:

And

**Code Reference: S.6.1. ~~Printed Receipt~~ Recorded Representation**

43.1. ~~Any~~**When a quantity is** delivered, printed ~~quantity~~**the recorded representation**

3.9.10. OTH-21.1. Appendix D - Definitions.: recorded representations, recording element

No action required.

3.10. Block 5 (LMD-23.2 was moved to a Voting Item)

3.10.1. VTM-23.2. Test Drafts **(See paragraph 3.2. of this agenda.)**

3.11. Block 7

3.11.1. CLM-22.1. T.3. On Tests Using Type 2 Transfer Standards.

No action required.

3.11.2. CDL-22.1. T.3. On Tests Using Type 2 Transfer Standards.

No action required.

3.11.3. HGM-22.1. T.4. Tolerance Application on Tests Using Type 2 Transfer Standard Test Method.

No action required.

3.12. Block 8

3.12.1. GEN-19.1. G-T.5. Tolerances on Tests When Transfer Standards are Used., Appendix A, Section 3.2. Tolerances for Standards., and Appendix D – Definitions: standards, field., ~~transfer standard.~~ and standard, transfer.

No action required.

3.12.2. OTH-22.1. Appendix A: Fundamental Considerations, 3. Testing Apparatus

No action required.

**Discussion:** This item consists of all the proposals associated with measuring instruments that were adopted during the NCWM 2023 Annual Meeting. Darrell presented each of the items individually and presented a proposed change to Publication 14 based on the adopted wording. (Note, not all items required a change to the publication, those items that did not cause a change are indicated with a "No action required" statement.

The members reviewed each proposed recommendation and agreed to adopt the change as presented or to make a change as defined in the following paragraphs.

Item 3.3. – A member pointed out that item 3.3 VTM – 18.1 S.3.1 Diversion, does require changes to the publication as the adopted wording states that an indicator light is required to state that the device is in flushing mode. The

initial discussion was focused on how does the manufacturer want to address this on their Certificate of Conformance for a device that has this feature. This discussion was based on the idea that a change to Publication 14 was needed to address this new function. Darrell commented that NTEP does not evaluate all device functions that are mentioned in the Handbook and while NTEP could evaluate the new requirements stated in the item, NTEP would not evaluate the accuracy of the flushing action.

After additional discussions, Darrell suggested that the NTEP evaluators, present at the meeting, get together and develop a recommendation on how to move forward with these new specification. The individuals met directly after the end of the meeting. What was determined during the discussion was that the new recommendations could be added to the existing Section *25. Discharge Lines and Discharge Valves* in the current VTM Checklist on page LMD-65 of the 2023 edition of the Publication.

At the start of the second day of the meeting, the following proposed change was presented to the members.

The members agreed with the proposal and adopted the change to the Publication.

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## VTM, Page LMD-65

## 25. Discharge Lines and Discharge Valves

**Code Reference S.3.1.1. Means for Clearing the Discharge Hose**

| | | |
|---|---|---|
| (f) | clear means, such as an indicator light or audible alarm, is used to identify when the valve is in use~~; and~~ ***on both quantity indications and any associated recorded representations (e.g., using such terms as "flushing mode" or "not for commercial use")***; | ☐ Yes ☐ No ☐ N/A |
| (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*** | ☐ Yes ☐ No ☐ N/A |
| (h) | no hoses or piping are connected to the inlet when it is not in use. | ☐ Yes ☐ No ☐ N/A |

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Item 3.5. - LPG-23.1 S.2.5. It was pointed out that LPG-23.1 S.2.5. was changed to informational at the NCWM Annual Meeting. I have struck out this item in this Meeting Summary

Item 3.6. - LPG-23.2 S.2.6.3 Electronic Vehicle-Mounted Meters. Correct Code Reference to S.2.6.3. The recommendation was adopted with this correction.

Item 3.9.4. - LPG-21.1. S.1.1. Primary Elements., UR.2. User Requirements. Corrected the wording in Code Reference: S.1.1.6. to show strike out of the word "Printed" and added the word "Recorded". The recommendation was adopted with this correction.

## 4. Loading Rack Controllers with Blending Capabilities

**Source:** Jim Pettinato - TechnipFMC

**Background:** In the below excerpt from LMD-15, clause 2 prohibits any correction to account for blend growth. However, in 2019 API published a new standard (API MPMS 11.3.4) that quantifies the growth

accurately, based on an analysis of empirical data. This new standard allows wholesalers of BGEs a way to account for the growth independent of blending mechanism applied (i.e. side-stream vs. ratio). Is can be applied to both scenarios, allowing terminal operators to account for the growth if after the metering point (i.e. in a ratio blending application), or to account for the growth after the metering point (i.e. to determine the actual BOB component quantity pre-blend when measuring the combined products in a side-stream blending application. Terminal operators have expressed a desire to apply this standard as intended in both of the described applications. Since the observed growth is significant (as much as 0.2% in real-world applications) the ability to perform these calculations allows for a more accurate representation of the delivered product.

This policy content is found in the front part of Pub 14 Liquid Measuring Devices Section (LMD-15)

In addition to the Common and General Code Criteria and applicable sections of the Wholesale and Loading Rack Meters and other Checklists, the following applies to tests of Loading Rack Meter Controllers with Blending Capabilities:

1. For NTEP testing, it is acceptable for the sum of the total quantity printed/displayed for each component of the blend to be different from the total quantity delivered due to intermediate rounding of each component. For example, if the quantity for each component has a higher internal resolution than that displayed, the displayed/printed quantity will be a rounded value. If each component of the blend is rounded in this way, the sum of the components may be different (due to rounding) than the actual quantity delivered by the system.

2. No mathematical correction is permitted to account for growth or shrinkage due to blending of product.

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Mr. Pettinato submitted the following supporting information for this item.

Some history on LMD Technical Policy, Section O. It looks like most of the references are reflected in the following reports:

- 1992: S&T Item 330-9 - Blending at the Loading Rack for Wholesale Transactions; Adjustments for Changes in Product Volume (Informational)
- 1993: S&T Item 330-7 – Blending at the Loading Rack for Wholesale Transactions; Adjustments for Changes in Product Volume (Withdrawn)
- 1994: Measuring Sector added Section O to LMD Technical Policy (according to the 2001 report; I find no evidence in the 1993-1995 reports)
- 2002: 2001 NTETC Measuring Sector Meeting – the Sector agreed that the entire Section O content was in need of review.
- 2003: 2002 NTETC Measuring Sector Meeting – No input was provided prior to meeting so the sector retained Section ‘O’ in its present form

It seems the reason the S&T item 330 was withdrawn back in the 90s was due to a lack of sufficient technical data to provide confidence in the reliability of calculated values for growth. Unfortunately, the records from those years don’t appear to yet include the full NTETC Sector reports (at least not that I could find) so I don’t have the missing link between the S&T activity in that period and the emergence of Section ‘O’, subparagraph 2. The timing of course suggests that the Sector added this paragraph based on the S&T committee’s position on the related item.

In 2019, with the publication of API MPMS 11.3.4 which quantified the expansion of the blend result experimentally when blending gasoline blend stocks with ethanol oxygenate, the ‘vagueness’ and uncertainty of allowing compensation calculations to account for this growth has been addressed. I would argue that it is time to revisit this discussion, and move that the Measuring Sector include this topic on the 2023 meeting agenda.

I envision a few ways to accomplish this: 1 - add a narrow exception for the 11.3.4 standard, 2 – more broadly, eliminate paragraph 2, or even more broadly 3 - eliminate Section 'O' entirely, if discussion perhaps leads to a better way to capture the resolution/rounding expectations when adding multiple subcomponent totals.

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**Proposal:** Modify the language in Section O, clause 2 to allow for this standard to be applied as follows:

2. ~~**No**~~ **Only** mathematical corrections **prescribed by the American Petroleum Institute (API) Manual of Petroleum Measurement Standards (MPMS)** is permitted to account for growth or shrinkage due to blending of product.

**The following Two Alternative Proposals were Offered for Consideration:**

1. Eliminate clause 2.
2. Eliminate or revise the entirety of Section O.

**Discussion:** This items details a change in that API accepts the use of a formula that allows the calculation of blended product growth or shrinkage after the blending action. This change has no impact on NTEP evaluations as the accuracy of the device being evaluated is dependent on the amount of material passed through the meter. However, the submitter pointed out that the Application section of one of their Certificates of Conformance contains the wording "No mathematical correction is permitted to account for growth or shrinkage due to blending of product." The submitter described how this statement limited the use of their meter in application where product is blended before or after the meter.

Research into the origin of this statement pointed to NTEP, Technical Policy, Section "O". The discussion extended into comments that this statement could impact applications beyond load-rack such as into retail applications. A question as to why policy O was put into Pub 14 was discussed (no language in HB44 directly supports policy O). The question of whether this needs to be described in Handbook 44 was raised.

During the discussions, it became NTEP's position that the statement in question went beyond the technical specifications of an evaluation. It was determined that Policy Section O limited the NTEP evaluation to the actual measurement of the material being used during the evaluation and no mathematical adjustment or compensation would be allowed if bended material is used. Based on this interpretation, NTEP agreed to remove the statement from the submitters Certificate of Conformance.

Summary. This item is considered closed with respect to any further action by the sector. NTEP administration will continue researching the origin of policy Section "O". The submitter will review certificates and possibly approach API representative to the NCWM and possibly NCWM FALS.

## 5. General Discussion Regarding Third-Party Electronic Devices that Interact with Electronic Registers

**Source:** Dmitri Karimov, IDEX Energy

**Background**:

- Third-party (often hand-held) electronic devices that interact with electronics registers

- These devices take the transaction data from the register and might modify this information prior to printing
- There is not clarity in Pub 14 how these devices are to be evaluated and what these devices are permitted and not permitted to do
- We have many requests from third party vendors to write software for such third-party devices and we are not sure what info we are allowed to pass on to them and if they can manipulate measurement data prior to printing

**Discussion:** This item was submitted to open discussion to see how other manufacturers and NTEP viewed 3rd party handheld devices that retrieve delivery information such as quantity, tables, date, time, etc. from the manufacturers NTEP certificated device. It was mentioned that this 3rd party handheld devices have obtained NTEP Certification.

The question was asked if these devices can/should be permitted to read the metrological data and perform any metrological function with or too the data. Darrell described the concept of 1st final measurement. This is the point at which the final measurement value is presented (displayed or recorded.) This is where the responsibility of the measurement instrument ends. 3rd party devices, handheld or not, can receive this data and perform other metrological functions, however, devices which perform these function are subject to State inspection requirements detailed in Handbook 44, and are often required to obtain NTEP Certification.

Darrell described the tests which would be performed on such a device if requested. Communications was an example as to what is being done. Specifically, the handling of the data when the device is communicating with the meter's indicator.

The members agreed that no action is required.

## 6. General Discussion Regarding the NTEP Committee Agenda Item ADM-21.5

**Source:** NTEP Administrator

**Background:** The NTEP Committee has item ADM-21.5 on its agenda to receive comments from NCWM industry members that will be impacted if the proposed amendment to the Verified Conformity Assessment Program (VCAP) Policy is recommended for and adopted by the NCWM Board of Directors. The item is titled:

**ADM-21.5 I Expand VCAP to Include Devices That do not Require Influence Factor Testing during the NTEP Certification Evaluation**

In summary, the proposal is an Informational item intended to extend the list of devices where the holder of an Active NTEP Certificate of Conformance, for the device, must comply with the requirements of the VCAP Policy. A copy of the NTEP Committee agenda item is being distributed with this meeting agenda and will be available on the Measuring Sectors web page under the 2022 Meeting Documents.

If this VCAP Policy change is approved, it will most likely impact each manufacturer or private label Certificate of Conformance holder of a measuring device. In addition, seeing that the NTEP Committee has heard no comments from the NCWM Membership since this item was first presented, one Measuring Sector Member felt this item should be place on this meeting agenda to raise awareness.

**During the 2022 MS Meeting**, Darrell introduced this as an information item to further make manufacturers aware of an item on the NTEP Committee agenda that, if adopted, would expand the Verified Conformity Assessment Program (VCAP) to include measuring devices. Darrell went on to explain that the expansion of the VCAP policy would require that a VCAP auditor audit the manufacturers quality system every three years. Darrell went on to explain the different requirements if the manufacturer hold a manufacturers Certificate of Conformance then those that would apply to the holder of a private label Certificate of Conformance.

Two manufacturers mentioned that their quality is already being audited because of their ISO 9001 certification. They see no value in having a second certification company audit the same documents, in fact, they commented that this could lead to one auditor accepting a document while the second auditor wants changes made. This puts the manufacturer in the middle with the possibility of no clean way out. There was a comment that maybe this should only apply to manufacturers that are not ISO 9001 certificated.

Darrell closed the discussion by stating that the NTEP Committee needs to hear comments for the manufacturers in support of or in opposition to the proposal and encourages everyone to provide they comment in writing or during the NTEP Committee open hearings during the NCWM Interim or Annual Meeting.

**Discussion:** This item has been Withdrawn from the NTEP Committee Agenda. No further discussion is needed. The item will be removed from the 2024 Measuring Sectors Agenda.

# Closing Items:

## 6. Changes in Meeting Documentation Development Process

**Source:** NTEP Administrator

**Background:** The responsibility for the development of the meeting agenda and summary documents has changed. Beginning with the 2021 meeting a member of the Measuring Sector, with the help of NTEP personnel, will assume this responsibility. This change is based on direction from the NTEP

Committee and the NCWM Board of Directors and aligns the responsibility with the current action of other Sectors, Work Groups, and Task Groups.

The NTEP Administrator will create a meeting summary report, for the 2020 Measuring Sector Meeting and will distribute to the Sector Members, at a later date.

In addition to the assignment of the individual or individuals responsible for these documents, I would encourage the Sector to develop a timeline document to assist the individual in the ability to develop a meeting agenda in a timely manner and with the least impact to their current responsibilities. Due to meeting time constraints, I would offer my assistance to develop this timeline document offline, with the distribution, review, and acceptance of the document to occur within six months from the adjournment of this meeting. A few items to be addressed in this timeline document would include:

1. A deadline for the submittal of new proposals, and reports from subgroups with specific assigned tasks,
2. A deadline for the distribution of the agenda and summary documents.

I would suggest that the timeline document be placed on the Measuring Sector's home page on the NCWM Web Site.

**2021 MS Meeting Discussion:**

During the 2021 MS Meeting, Michael Keilty (MS Chair) opened the item up for discussion. Darrell Flocken asked that this item is to be put on hold pending the outcome of a similar topic with the standing committee reports. This was followed by some discussion on the need to finalize the outcome of an item before moving on to the next item. A second approach saw suggested that the in-meeting work could consist of listing a series of bullet points to make the creation of the meeting summary easier after the fact.

MS member Marc Buttler volunteered to take on the responsibility under certain meeting style conditions where the summary was finalized before moving on to the next item.

Mr. Keilty declared this item as closed.

**2022 MS Meeting Discussion:**

This item was not discussed at the meeting.

**Discussed this item briefly.** Weighing Sector chair has appointed a vice-chair who's responsibilities are documented. Darrell will follow up with Michael once the Weighing Sectors, Roles and Responsibilities document is agreed to by the NTEP Committee.

## 7. Recognize OIML Test Results

**Discussion:** This item was discussed after the close of the 2022 Measuring Sector Meeting. The proposal was presented to the NTEP Committee during Open Hearings at the NCWM Interim Meeting in January 2023 and again presented during Open Hearings at the NCWM Annual Meeting July 2023. The committee heard support from two manufacturers. This item will be presented again during Open Hearings at the NCWM Interim Meeting in January 2024. This

item will be reviewed and policy can be changed or the NTEP committee can ask Darrell to withdraw the item.

One member mentioned that the prior discussion about limited availability of labs to test would justify the use of prior tested data from OIML tests.

NTEP signed for R60 but did not as an MAA for R76.

Discussed the need for manufacturers to stand in support at next meeting. Discussed the need for gap analysis comparing OIML testing to NTEP Publication 14 testing.

## 8. Meeting Location and Date of 2024 Measuring Sector Meeting

Background: This Item is included on the Sector's agenda to allow for input from Sector members on future meetings and to allow NTEP Administration to apprise the Sector of dates that have already been set.

### 2023 MS Meeting Discussion:

**Discussion:** Group discussed different locations and criteria. The members agreed that the 2024 Measuring Sector will be held on September 17th and 18th 2024. Suggested meeting locations will be passed onto Elisa for consideration.

## 9. Meeting Attendees

The following individuals participated in the combined 2023 Measuring and Software Sector meeting.

| Name | Company | Sector |
|---|---|---|
| Eric Bollerman | Rice Lake Weighing Systems | S |
| Marc Buttler | Emerson – Micro Motion | M |
| Craig Cavanaugh | Fill-Rite Company | M |
| Rodney Cooper | Red Seal Measurement | M |
| Licia D'Ulivo | Measurement Canada | M |
| Darrell Flocken | NCWM/NTEP | M/S |
| Andy Gell | Foss North America | S |
| Jeff Gibson | NCWM/NTEP | M/S |
| Teri Gulke | IDEX Energy, Advance Flow Solutions | S |
| John Hathaway | Total Control Systems, Murray | M |
| Dmitri Karimov | Liquid Controls (AFS) | M |
| Allen Katalinic | NCWM/NTEP | M |
| Michael Keilty | Endress + Hauser Flow USA, Inc. | M |
| Jan Konijnenburg | NIST OWM | S |
| Rich Miller | Technip FMC | M/S |
| Robin Parsons | Parafour Innovations | M |
| Jim Pettinato | Technip FMC | S |
| Brent Price | Gilbarco | M |
| Randy Ramsey | North Carolina Depart. of Agri. | M |
| Wes Strawn | Red Seal Measurement | |
| Alison Wilkinson | Maryland Depart. of Agri. / NTEP | M |