National Type Evaluation Program (NTEP)
Measuring Sector

2020 Meeting Summary
September 22, 2020 (11:00 am to 2 pm EDT)
September 23, 2020 (11:00 am to 2 pm EDT)
Virtual Meeting

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. Laboratory and Field Evaluation – Clarification of Language

Source: NTEP Laboratories

Background Information: The NTEP evaluators have experienced confusion when interpreting the "Laboratory or Field Evaluation" section of the LMD checklist. At its 2019 meeting, the Sector reviewed proposed changes from a small task group appointed in 2018 to clarify this portion of the checklist. After some discussion and additional changes, the Sector agreed to recommend changes to this section for inclusion in the 2020 edition of NCWM Publication 14.

At that meeting, the Sector agreed that a future discussion needs to be held to explore the different aspects of "compatibility," including compatibility of separately evaluated and certified measuring and indicating elements as well as compatibility of changes to metrologically significant components of complete devices.

- The following individuals agreed to work on this issue of "Compatibility of Components:"
  - Marc Buttler (Emerson)
  - Tina Butcher (NIST Office of Weights and Measures)
  - Craig Cavanaugh (Tuthill Transfer Systems)
  - Allen Katalinic (NCWM NTEP)
  - Dmitri Karimov (Teri G agreed to explore the possibility of LC involvement)
  - Rich Miller (FMC)
  - John Hathaway (Murray Equipment)

- The group was asked to consider at least the following two key areas relating to "compatibility" and prepare a recommendation for the Sector to consider at its next meeting for addressing these in type evaluation:
  - The case in which individual certified equipment is used to create a metrologically complete, certified system.
  - The case in which an existing, certified system is extended through the addition compatible devices through the addition of certified equipment.
- The group was also asked to consider how third-party software is to be addressed with regard to compatibility.

At the 2019 Measuring Sector meeting, a small task group of volunteers were tasked with developing more definitive criteria for the current "20-day permanence test" used in the NTEP Field and Permanence Testing phase of evaluating mobile electronic devices and making recommendations to the Sector for possible changes to NCWM Publication 14. The **20-Day Permanence Criteria Task Group** consisted of the following individuals:

- Tina Butcher (NIST Office of Weights and Measures)
- Craig Cavanaugh (Tuthill Transfer Systems)
- John Hathaway (Murray Equipment)

- Allen Katalinic (NCWM NTEP)
- Dmitri Karimov (LC)
- Rich Miller (FMC)
- Randy Ramsey (NC)
- John Roach (CA DMS)

The task group was asked to develop more specific standards to ensure consistency with items such as duration, road conditions, standards for degree of use, mileage, etc. need to be encompassed in the discussion.

2020 MS Meeting Discussion:

Before discussing the charge of the Work Group, it must be noted that the changes in Appendix E of the 2019 MS meeting and agreed to be included in the 2020 edition of Publication 14; did not get put into the publication. The agreed to changes are listed in Appendix A of this agenda.

The Sector will hear updates and consider recommendations from both the "Compatibility of Components Task Group" (See Appendix B for a copy of the task groups recommendation) and the "20-Day Permanence Test for Mobile Electronic Devices Task Group" (See Appendix C for a copy of the task groups recommendation.)

During the 2020 MS Meeting, the members reviewed the recommendation from the Compatibility of Components Task Group as written in Appendix B. In general, all members agreed with the recommendation. Darrell Flocken (NTEP) asked for some additional time to review the recommendations to determine if any changes to Publication 14 are needed to support them. Darrell Flocken (NTEP) will bring any suggested change to Pub 14 to the 2021 MS Meeting.

The members also reviewed the recommendations from the 20-Day Permanence Test for Mobile Electronic Devices Task Group (See Appendix C for a copy of the task groups recommendation.) The discussion clearly indicated that the option to have the permanence testing performed in an accredited laboratory, in controlled conditions, was supported by industry members while NTEP Laboratory representatives expressed concerns with this approach. The members were asked to discuss the option of laboratory testing and determine if the option should be further developed. The consensuses was to move forward with adding the wording as offered as "Recommendation 1", with changing the word "should" to "shall" in the third bullet of paragraph 1.b., to the 2021 edition of Pub 14 and not pursue option 2 at this time.

2. Provisions to Address Systems Dispensing Diesel Exhaust Fluid (DEF) in the LMD Code – 2019 S&T Committee Agenda Item LMD-3

Background: At its 2019 Annual Meeting, the NCWM adopted changes to the following paragraphs in the LMD Code (along with changes to the "Application" Section and "User Requirements" which do not impact the Pub 14 checklist) in NIST Handbook 44 to better address metering systems used to dispense Diesel Exhaust Fluids and other products. These were considered on the S&T Committee's Agenda under Item LMD-3 and are shown in the table below for reference.

- S.1.6.10. Pay-at-Pump Retail Motor Fuel Dispensers (LMD Checklist 2019 Edition, Page LMD-85)
- S.2.5. Zero-Set-Back Interlock, for Retail Motor-Fuel Devices. (No change needed to LMD Checklist 2019 Edition, Page LMD-42)
- S.4. Marking Requirements.
- S.5. Zero-Set-Back Interlock, for Retail Motor-Fuel Devices

A.1. General. – This code applies to:

(a) devices used for the measurement of liquids, ~~including liquid fuels and lubricants,~~ and
(b) wholesale devices used for the measurement and delivery of agri-chemical liquids such as fertilizers, feeds, herbicides, pesticides, insecticides, fungicides, and defoliants.
(Added 1985)

S.1.6.10. Automatic Timeout – Pay-At-Pump <u>for</u> Retail ~~Motor-Fuel~~ Devices. *– Once a device has been authorized, it must de-authorize within two minutes if not activated. Re-authorization of the device must be performed before any product can be dispensed. If the time limit to de-authorize the device is programmable, it shall not accept an entry greater than two minutes*
[Nonretroactive as of January 1, 2017]
(Added 2016) **<u>(Amended 20XX)</u>**

S.2.5. Zero-Set-Back Interlock, **<u>for</u>** Retail ~~**Motor-Fuel**~~ Devices. **– A device shall be constructed so that:**

(a) after a delivery cycle has been completed by moving the starting lever to any position that shuts off the device, an automatic interlock prevents a subsequent delivery until the indicating elements, and recording elements if the device is equipped and activated to record, have been returned to their zero positions;

(b) the discharge nozzle cannot be returned to its designed hanging position (that is, any position where the tip of the nozzle is placed in its designed receptacle and the lock can be inserted) until the starting lever is in its designed shut-off position and the zero-set-back interlock has been engaged; and

(c) in a system with more than one dispenser supplied by a single pump, an effective automatic control valve in each dispenser prevents product from being delivered until the indicating elements on that dispenser are in a correct zero position.
(Amended 1981**<u>,</u>** ~~**and**~~ 1985**<u>, and 20XX</u>**)

S.4.4.1. Discharge Rates. *– On a retail device with a designed maximum discharge rate of 115 L (30 gal) per minute or greater, the maximum and minimum discharge rates shall be marked in accordance with S.4.4.2. Location of Marking Information; Retail ~~Motor-Fuel~~ Dispensers. The marked minimum discharge rate shall not exceed 20 % of the marked maximum discharge rate.*
[Nonretroactive as of January 1, 1985]
(Added 1984) (Amended 2003 **<u>and 20XX</u>**)

S.4.4.2. Location of Marking Information; <u>for</u> Retail ~~Motor-Fuel~~ Dispensers. *– The marking information required in the General Code, paragraph G-S.1. Identification shall appear as follows:*

*(a) within 60 cm (24 in) to 150 cm (60 in) from the base of the dispenser **<u>for system in a dispenser</u>**;*

(b) either internally and/or externally provided the information is permanent and easily read;

and

(c) on a portion of the device that cannot be readily removed or interchanged (i.e., not on a service access panel).

Note: *The use of a dispenser key or tool to access internal marking information is permitted for retail liquid-measuring devices.*
[Nonretroactive as of January 1, 2003]
(Added 2002) (Amended 2004 **and 20XX**)

…

S.5. Totalizers for Retail ~~Motor-Fuel~~ Dispensers. – Retail **~~motor-fuel~~** dispensers shall be equipped with a non-resettable totalizer for the quantity delivered through the metering device.

[Nonretroactive as of January 1, 1995]

(Added 1993) (Amended 1994 **and 20XX**)

…

N.4.2.2. Retail Motor-Fuel and DEF Devices.

(a) Devices without a marked minimum flow-rate shall have a "special" test performed at the slower of the following rates:

(1) 19 L (5 gal) per minute; or

(2) the minimum discharge rate at which the device will deliver when equipped with an automatic discharge nozzle set at its slowest setting.

(b) Devices with a marked minimum flow-rate shall have a "special" test performed at or near the marked minimum flow rate.

(Added 1984) (Amended 2005 **and 20XX**)

UR.2.4. Diversion of Liquid Flow. – A **~~motor-fuel~~** device equipped with two delivery outlets used exclusively in the fueling of trucks shall be so installed that any diversion of flow to other than the receiving vehicle cannot be readily accomplished and is readily apparent. Allowable deterrents include, but are not limited to, physical barriers to adjacent driveways, visible valves, or lighting systems that indicate which outlets are in operation, and explanatory signs.
(Amended 1991 **and 20XX**)

UR.2.5. Product Storage Identification.

(a) The fill connection for any petroleum product **or other product** storage tank or vessel supplying **petroleum product or other products** **~~motor-fuel~~** **~~devices~~** shall be permanently, plainly, and visibly marked as to product contained.

Recommendation: While the specification sections noted above are currently referenced in the LMD Checklist, these sections are specifically covered under the "Retail Motor-Fuel Dispensers" portion of the checklist. The changes to NIST Handbook 44 were intended to make

the references more generic so as to provide the ability to apply criteria to systems dispensing DEF. However, the current Pub14 checklist does not facilitate this.

The Sector is asked to discuss how to best address this issue so that NTEP evaluators have clear checklist criteria to apply to DEF-dispensing systems. Among possible options for the Sector to consider are:

1) Broaden the "RMFD" Checklist to Refer to "Stationary Retail Dispensing Systems"

2) Create as separate section for DEF dispensing systems, which would mirror many of the RMFD Checklist requirements and, perhaps, include additional guidance relative to DEF dispensing systems.

2019 MS Meeting Discussion: Technical Advisor, Tina Butcher presented the item and reviewed the two possible options noted above and asked if Sector members preferred one or the other of these options. She pointed out there is presently no section in the checklist to address DEF dispensers.

Randy Moses (Wayne Fueling) commented he doesn't want to see separate checklists, and Allen Katalinic (NCWM NTEP) agreed, noting he doesn't want to add to the overall size of the checklist.

There was general agreement among Sector members present to lean toward the first option of broadening the RMFD checklist. Mrs. Butcher recommended that, if the Sector decides to pursue the option of broadening the RMFD checklist, the Sector should go back and review the RMFD checklist and develop a proposal to modify the checklist to encompass stationary retail dispensing systems. She also noted there are likely sections of that checklist which may not be appropriate for use with DEF.

Mr. Moses suggested the Sector's objective should be for Pub 14 to align with NIST Handbook 44. For any gaps identified, the Sector should develop proposed changes to HB 44 and once those are adopted make corresponding recommendations to modify the Pub 14 checklist.

Measuring Sector Chairman, Michael Keilty noted the MFM Code doesn't include these references to allow recognition for DEF.

The NTEP Laboratories are already applying these requirements, so there shouldn't be a significant impact on devices already evaluated.

Mrs. Butcher questioned how best to go about broadening current references to "retail motor-fuel dispensers" to include other stationary retail devices. A "search and replace" might be useful in identifying these references, but it would not be appropriate to replace all of them; some references might correctly apply to only RMFDs. The Sector discussed having one or a group of people do such as search to identify the references. Mr. Keilty suggested we include this as a carryover item with regard to these checklist changes.

Decisions:

The Sector agreed to the following corrections to the LMD Checklist:

- ***Correct the reference to "S.1.6.10. Automatic Timeout-Pay-At-Pump for Retail Devices" on pg. LMD-89. It reads S.6.1.10. and it should read S.1.6.10.***

- ***Correct the existing reference to S.5. Totalizers on page LMD-45 of Appendix A to the Sector's Agenda. It reads "S.5.1." and should read "S.5."***

Appendix A to the Sector's agenda has been revised to include the above corrections and other updates made during the Sector's meeting. The revised version is included as Appendix A to this summary.

The Sector also acknowledged the changes made by the NCWM to broaden the application of the LMD Code to encompass DEF and other devices. This is consistent with what the laboratories have already been doing and will continue to do.

The Sector agreed the RMFD section of the checklist needs to be broadened and not limited to "retail motor-fuel." However, the Sector is reluctant to do a "search and replace" without specifically reviewing the proposed changes to ensure there isn't an inadvertent problem created by a given change. Consequently, the Sector agreed that NTEP will through the RMFD checklist and do a "search and replace" marking the replacements as proposed changes for Sector review at its next meeting. This effort will include the following tasks and parameters.

- ***The search will include a search for the terms such as the following as well as any terms that are limiting:***

    - ***"retail motor-fuel" (with the hyphen)***
    - ***"retail motor fuel" (without the hyphen)***
    - ***"retail fuel devices"***
    - ***"motor-fuel"***
    - ***"motor fuel"***
    - ***"retail" and "fuel" and motor"***

- ***Darrell Flocken will assign Mike Manheim the task of doing a search for and highlighting these terms in the electronic version of Pub 14***

- ***The following people agreed to serve on a small task group who will assist by reviewing the marked document:***

    - ***Tina Butcher (NIST OWM)***
    - ***Michael Keilty (Endress + Hauser)***
    - ***Allen Katalinic (NCWM NTEP)***
    - ***Brent Price (Gilbarco)***

These individuals will provide comments back to Darrell Flocken. Darrell will ask Mike to incorporate changes proposed by the task group.

- ***The final proposed changes as identified and agreed to by the task group will be included as a "carryover item" on the Sector's 2020 Meeting Agenda and presented to the Sector for review and agreement at that meeting.***

2020 MS Meeting Discussion:

Before discussing this agenda, it must be noted that the changes to correct the existing reference to S.5. Totalizers on page LMD-45 of Appendix A of the 2019 Sector's Agenda was not made. The current code reference reads "S.5.1." and should read "S.5."

Appendix D is the highlighted version from Mike Manheim showing all references to the term 'retail motor fuel".

During the 2020 MS Meeting the members discussed the need to modify the current wording in Pub 14, to follow the changes in HB44 to recognize DEF dispensers as being different than RMFDs. This led to a discussion of the possibility of other "dispensers" also being included. Both industry and NTEP evaluators believe that the current wording in Pub 14 is sufficient for the evaluation of either dispenser type. Darrell Flocken (NTEP) accepted the assignment of searching Pub 14 for any reference back to HB44, N.4.2.2. The following morning Darrell Flocken (NTEP) report that 1 occurrence of N.4.2.2 was found in Pub 14, page LMD-116, *A. Field Evaluation and Permanence Test of New-Design Meters in Retail Motor Fuel Dispensers, Repeatbility*. The members reviewed the occurrence and agreed that it was generic in nature and could apply to any dispensing device type. Because of this, the membership agreed that no change to Pub 14 is needed. However, the members also agreed that additional research should be done to confirm that the mentioning of a specific dispenser type does not preclude the application of the specification when evaluating DEF dispensers. The members agreed to hold this item over until the 2021 MS Meeting. However, to accomplish this review a small task group was identified which will review the contents of Appendix D and provide comments regarding the need to add DEF to any of the locations which mention a specific dispenser type. The group is made up of the following: Tina Butcher (NIST, OWM) (Group Leader), John Hathaway (Murray Equipment), Brent Price (Gilbarco, Inc.), Randy Moses (Wayne Fueling Systems), Randy Ramsey (North Carolina), Michael Keilty (Endress + Hauser Flowtec AG, USA), Rick Miller (FMC Technologies Measurement Solutions, Inc.), and Darrell Flocken (NTEP). The group members agreed to review Appendix D and report their findings to Tina Butcher (NIST, OWM) and Darrell Flocken (NTEP) by the end of January 2021. Darrell Flocken (NTEP) will summarize the comments received from the work group members into one document and schedule a Zoom Meeting in the March/April 2021 time frame for the work group to review all comments and develop a recommendation for the MS Members to consider at the 2021 meeting.

3. Liquefied Petroleum Gas Liquid-Measuring & Anhydrous Ammonia Liquid-Measuring Devices Code Paragraph S.2.5. Zero-Set-Back Interlock, Stationary and Vehicle Mounted Meters, Electronic – 2019 S&T Committee Agenda Item LPG-2

Background: At its 2019 Annual Meeting, the NCWM adopted a new paragraph S.2.5. Zero-Set-Back Interlock, Stationary and Vehicle Mounted Meters, Electronic in the Liquefied Petroleum Gas (LPG) Liquid-Measuring Devices & Anhydrous Ammonia Liquid-Measuring

Devices Code of NIST Handbook 44. Subsequent paragraphs were renumbered accordingly. This was considered on the S&T Committee's Agenda under Item LPG-2; see the Committee's 2019 Interim Report for additional details.

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 two minutes the transaction must be completed before additional product flow is allowed. The 2-minute timeout shall be a sealable feature on an indicator.

(Added 2019) (Nonretroactive as of 2021)

At its 2019 meeting, the NTEP Measuring Sector agreed to add a "note" to the existing Code Reference S.2.5. Zero-Set-Back Interlock that applies to stationary retail motor-fuel LPG and NH_3 dispensers to alert manufacturers of the approaching implementation date for this requirement on other stationary devices and vehicle-mounted systems.

The Sector also to include this item as a "carryover item" on the Sector's 2020 agenda so that proposed changes to reformat this reference as a checklist item; remove the note; and add check boxes can be considered by the Sector.

2020 MS Meeting Discussion

Now that the new paragraph S.2.5. Zero-Set-Back Interlock, Stationary and Vehicle Mounted Meters, Electronic is effective, this note needs to be removed and a new checklist item created to reference the new S.2.5. and to reflect the renumbering and retitling of the prior paragraph titled "S.2.5. Zero-Set-Back-Interlock" to the title of "S.2.6. Zero-Set-Back Interlock for Stationary Retail Motor-Fuel Devices." Proposed changes to the checklist for the Sector's consideration are shown in Appendix E.

During the 2020 MS Meeting, the members discussed extensively the differences between time out for set back and time out for transactions. There were several manufacturers that disagreed with the 2-minute requirement for Zero Setback. Dmitri Karimov (Liquid Controls, LLC), John Hathaway (Murray Equipment), and Rich Miller (FMC Technologies Measurement Solutions, Inc.) promote the concept to change to 3 minutes. Tina Butcher (NIST, OWM) discussed the WWMA agenda item that discusses transaction time-out and distributed a copy of the new proposals via email. Darrell Flocken (NTEP) stated that the item being discussed is now a HB 44 specification and therefore should be included into Pub 14. Darrell Flocken (NTEP) and Michael Keilty (Endress + Hauser Flowtec AG, USA) described the need for diligence to ensure uniformity between the requirements and type test procedures.

The members agreed to add the wording shown in Appendix E to the 2021 edition of Pub 14.

4. Magnetic Flow Meters – NCWM Pub 14 Technical Policy and Test Procedures

Background/Discussion: This item was added as a "walk-on" item during the Sector Meeting in response to a request from the NTEP Evaluating Laboratories and Sector Chairman Michael Keilty.

Mr. Keilty introduced the item, noting that more definitive criteria is needed in NCWM Pub 14 to address magnetic flow meters. Pub 14 includes some criteria in a new Section M. which was added to the Field Evaluation and Permanence Test Section of the LMD Checklist last year. However, there isn't a lot more in the overall checklist. Some laboratories have questioned whether there is an adequate amount of information in the checklist for evaluating these devices, particularly since NTEP has not evaluated a large number of them.

Mrs. Butcher suggested the Sector begin by considering how to close the gap created by the "exception" in the title of Section M. "Initial Evaluation and Permanence Tests for Magnetic Flow Meters and Ultrasonic Meters (Other Than Vehicle-Mounted and Retail-Motor-Fuel Applications)" For example, the Sector might consider adding a statement such as "For Vehicle-Mounted Magnetic Flow Meters and Vehicle-Mounted Ultrasonic Meters, use the field and permanence test requirements found in Section C." A similar statement might be considered to address meters used in RMFD applications; for example, "For magnetic flow meters and ultrasonic meters used in Retail Motor-Fuel Applications, use the field and permanence test requirements found in Section A." If these criteria aren't appropriate, then the Sector should discuss what criteria are appropriate and specify this in the field and permanence test criteria. Mrs. Butcher suggested a small work group be formed to review these issues and provide suggestions for the Sector to consider and the Sector concurred.

The Sector also acknowledged similar concerns about whether Pub 14 includes clear criteria for addressing all applications of ultrasonic meters. The Sector recognized this is an issue that may need to be addressed at some point, including elaborating on the checklist criteria, and addressing the technology in the Product Families Table. In the meantime, there is nothing that precludes the submission and evaluation of ultrasonic metering applications.

Mr. Keilty also questioned why a previously included category of "normal liquids" category no longer appears in the Product Families Table and questioned whether it was inadvertently eliminated. Sector Technical Advisor, Tina Butcher, referenced the 2006 Measuring Sector Summary during which the Sector agreed to add the criteria and column to Pub 14 to address magnetic flow meters. The two separate tests listed in today's (2019) edition under this category were added at that time. Thus, the current separate "tests" were intentional. This doesn't mean the criteria cannot be revisited; however, the current references were not the result of a mistake in the editing of the table and the Sector would need to review the item and past when considering consider how or if to propose redefining the testing.

Mr. Keilty questioned whether there is a need for something specific that states ultrasonic and magnetic flow meters. Sector Technical Advisor Tina Butcher noted there is no specific language in NIST HB H44 that references magnetic flow meters since HB 44 is not design-specific. Type evaluation criteria are established based on H44. In the case where NTEP begins looking at a different technology than has been evaluated before, it is necessary to establish minimum amounts of testing. In the past, NTEP has typically started with stating a number of

tests over what range of conditions. For different technologies, NTEP may look at the need to test under different conditions based on the technology of the device and how the technology is affected by certain characteristics of the product being measured such as viscosity. As NTEP gets applications for technologies that haven't been dealt with before in NTEP evaluations, it is necessary to ensure specifics are established in the checklist for permanence testing and relevant code references are identified and specified in appropriate sections of the Pub 14 checklist.

The Sector discussed questions of: What are the gaps in the checklist right now? Do we add (in addition to the new Section M added to the field and permanence tests section in 2018) a section to include "Magnetic Flow Meters" criteria or do we reference existing sections with instructions such as "for magnetic flow meters, use the procedures and checklist criteria found in section x?"

The Sector also needs to look at the Product Families Table as it pertains to magnetic flow meters to ensure we can minimize the amount of testing needed to demonstrate confidence in the device and its performance. In general, manufacturers describe the maximum conductivity for products measured by a magnetic flow meter. For hydrocarbons a conductivity is not typically specified. For organics, one may find values specified. The Sector set the criteria for "Test F" and "Test D."

For many products, conductivity values aren't available and, therefore, not specified in the table. Mr. Keilty commented he doesn't recall the language in the "Test D" criteria to be what was to be added.

John Roach (CA DMS, NTEP Lab) noted he had raised questions in the past year regarding how milk fits into the existing Product Families table, particularly for a magnetic flow meter. Does this product qualify as a beverage with regard to the table? Is its conductivity different from that of the products covered in the product category of "water?" Does milk fit into an established product category or should another category specifically for "milk" be added? Mr. Keilty also noted a question arose regarding were "sludge" would fall in the table. NTEP Director Darrell Flocken (NTEP) noted sludge would likely have some conductivity, but it is unclear how much conductivity it would have or how the conductivity would vary in the product.

The Sector agreed a small work group might be appropriate to address these issues surrounding the Product Families table and this might be the same group proposed for reviewing the mass flow meter and ultrasonic meter criteria.

Decisions: The Sector established a small work group to take on a set of tasks related to refining type evaluation criteria for magnetic flow meters. The work group consists of the following:

- ***Marc Buttler***
- ***Allen Katalinic***
- ***Michael Keilty***
- ***Randy Ramsey***
- ***John Roach***

The work group is asked to review NCWM Pub 14 and complete the following tasks and bring recommendations for changes to Pub 14 back to the Sector for review at its 2020 annual meeting:

- ***Identify how to close the gaps created by the exceptions in the title of "Section M. Initial Evaluation and Permanence Tests for Magnetic Flow Meters and Ultrasonic Meters (Other Than Vehicle-Mounted and Retail-Motor-Fuel Applications)"***
- ***Review other sections of Pub 14 to ensure there are adequate criteria to address magnetic flow meters and their applications.***
- ***Make recommendations on how to best address the gaps, including referencing other existing sections of the checklist or creating new language to be considered by the Sector.***
- ***Review the criteria and tests specified for magnetic flow meters in Product Families to determine if changes are needed and, if so, make recommendations on what those changes should be.***

2020 MS Meeting Discussion

During the 2020 MS Meeting, Michael Keilty (Endress + Hauser Flowtec AG, USA, MS Chair) reviewed the work groups recommendation for changes to the 2021 edition of Pub 14 with the MS members. The members agreed to all recommendations made by the work group. The recommendations are shown below.

In addition, an editorial error of the numbering at the beginning of LMD-1A was identified. The error is that the paragraphs are numbered with "11" and "12" and it should be "1" and "2." The correction will be made in the 2021 edition of Pub 14.

The members also recognized that there is a Milk Meter Task Group developing changes to the Milk Meter Code in Handbook 44. It was suggested that the members of the task group be informed of the addition of "milk" to the product family. Mr. Mike Manheim (NTEP) is a technical advisor to the task group and was asked to forward this change to its members.

The group began discussing the omission of milk from the Product Family Table. The discussion led to several recommendations:

1) The group recommends that Milk be added to the Magnetic Flowmeter column of the Pub 14 Product Family Table under Test D below Juices. The conductivity of Milk will be listed as 4 to 7 µS/cm^3.
2) The group recommends that the verbiage in Test D be modified to say:
   a. Test D
   ~~To obtain coverage for a product category, test with one product in the product category.~~ To cover a range of the following products, test one product having a specified conductivity. The Certificate of Conformance will cover all products in ~~the product category~~ all product categories listed in the Table under Test D.

   b. Test D does not apply to product categories of pure alcohols, pure glycols, ~~pure water~~, solvents chlorinated, solvents general, fuels, lubricants, industrial and food grade liquid oils.

The group discussed the listing of "parameters" on the Certificate of Conformance. The group recommends that the verbiage in Pub 14 (2020) LMD-1 A. Type Evaluation Test Location, Installations Criteria and Certificate of Conformance Information under "The CC should include the following information:" be modified to say:

1) Approved ranges and parameters (flow rates, viscosity / specific gravity / conductivity, product family or families, sizes of meter, minimum measured quantity)
2) It was also pointed out that there is a number error under Section A. The paragraph numbers 11. and 12. Should be corrected to read 1. and 2.

The group discussed a situation which arose during a type evaluation of a vehicle mounted milk metering system. The discussion led to several recommendations:

1) Pub 14 (2020) LMD-92 – 40. Additional Checklists and Test Procedures for Milk Meters.
   a. Add
   Code Reference: N.1 Test Liquid ---- Milk Meters Code (Milk Meters Code Reference)

   (b) A milk measuring system shall be tested with the type of milk to be measured when the accuracy of the system is affected by the characteristics of the milk (e.g., positive displacement meters).

   Note: Mixing may be required.

2) Pub 14 (2020) LMD-129 – M. Initial Evaluation and Permanence Tests for Magnetic Flow Meters and Ultrasonic Meters (Other Than Vehicle-Mounted and Retail-Motor-Fuel Applications)
   a. Add
   Note: For Vehicle-Mounted Magnetic Flow Meters and Vehicle-Mounted Ultrasonic Meters, use the field and permanence test requirements found in Section C. For Retail Motor-Fuel Magnetic Flow Meters and Retail Motor-Fuel Ultrasonic Meters, use the field and permanence test requirements found in Section A.

New Items:

5. Proposal to change S.3. Markings of the Water Meter Code, Proposal Submitted to the S&T Committee

Source: Clark Clooney, California Department of Food and Agriculture, Division of Measurement Standards

The California Department of Measurement Standards has submitted the proposal, shown below, to the Regional Weights and Measures Association for possible inclusion into the National S&T Committee Agenda. CA has asked for this item to be added to the meeting agenda as a general discussion item.

General Information	
1. Date: 08/06/2019	**2. Regional Association(s):** (Not applicable for proposals to the Board of Directors or NTEP Committee) _X_ Central (CWMA) _X_ Northeastern (NEWMA) _X_ Southern (SWMA) _X_ Western (WWMA)
3. Standing Committee:	
__ Laws & Regulations _x_ Specifications & Tolerances __ Professional Development __ Board of Directors __ NTEP Committee	
4. Submitter's Name:	**Submitter's Organization:**

Clark Cooney	California Department of Food and Agriculture, Division of Measurement Standards		
5. Address: 6790 Florin Perkins Road, Suite 100			
6. City: Sacramento	**7. State:** CA	**8. Zip Code:** 95828-1812	**9. Country:** USA
10. Phone Number: 916-229-3000	**11. Fax Number:** 916-229-3055	**12. Email Address:** clark.cooney@cdfa.ca.gov	
Proposal Information			
13. Purpose: Concise statement as to the intent or purpose of this proposal, such as problem being fixed. **(Do not include justification here.)**			
Adding meter size and water flow direction indication marking requirements to NIST Handbook 44, Section 3.36. Water Meters S.3. Markings.			
14. Document to be Amended:			
_X_ NIST Handbook 44 __ NIST Handbook 130 __ NIST Handbook 133 __ NCWM Guidance Document __ NCWM Bylaws __ NTEP Administrative Policy			
15. Cite portion to be Amended: Please file a separate Form 15 for each code, model law or regulation to be amended.			
NIST Handbook 44, Section: 3.36. Water Meters, Specifications S.3. Markings.			
16. Proposal: Please use ~~**strikeout**~~ to show words to be deleted and **underline** to show new words. **(Do not use track changes.)**			
Add subparagraph: **S.3.2. Meter Size and Directional Flow Marking Information.** A water meter shall be clearly and indelibly marked with the following information: (a) meter size on the indicator face plate; and (b) water flow direction designated by an arrow cast or stamped into the body of the meter.			
17. Justification: Please include national importance, background on the issue, and reference to supporting data or documents.			
Meter size must be identified to select the suitable device for the application. (NIST H-44 G-UR.1. Selection Requirements.) Water flow direction must be identified to help ensure the device is installed correctly. (NIST H-44 G-UR.2. Installation Requirements.)			
18. Possible Opposing Argument's: Please demonstrate that you are aware and have considered possible opposition.			
The proposed amendments, if adopted, would require additional marking and may impact manufacturing processes.			
19. Requested Action if Considered for NCWM Agenda:			
_X_ Voting Item ___ Developing Item ___ Informational Item ___ Other (Please Describe):			
20. List of Attachments:			
None			

2020 MS Meeting Discussion

Members of the MS agreed that the meter size information was needed for type evaluation and enforcement. One water meter manufacturer described two differing meter technologies that his company makes that look the same but are actually different sizes. He marks those meter sizes on the dial or on the meter body. That manufacturer stated that the AWWA standards require the marking of meter size. The direction of flow arrow is needed for correct installation and testing purposes.

As this was provided as an informational item, the MS offers no comments.

6. Proposal to change UR.3.3. of the Mass Flow Meter Code, Submitted to the S&T Committee

Source: Andrew Burke, Restaurant Technologies, Inc.

The following proposal, shown below, was submitted to the Regional Weights and Measures Association for possible inclusion into the National S&T Committee Agenda. It is included here as information and possible discussion.

General Information			
1. Date: 4/14/2020	**2. Regional Association(s):** (Not applicable for proposals to the Board of Directors or NTEP Committee) _X_ Central (CWMA) _X_ Northeastern (NEWMA) _X_ Southern (SWMA) _X_ Western (WWMA)		
3. Standing Committee: __ Laws & Regulations _X_ Specifications & Tolerances __ Professional Development __ Board of Directors __ NTEP Committee			
4. Submitter's Name: Andrew Burke	**Submitter's Organization:** Restaurant Technologies, Inc.		
5. Address: 2250 Pilot Knob Road, Suite 100			
6. City: Mendota Heights	**7. State:** MN	**8. Zip Code:** 55120	**9. Country:** USA
10. Phone Number: (612) 469-9629	**11. Fax Number:**	**12. Email Address:** aburke@rti-inc.com	
Proposal Information			
13. Purpose: Concise statement as to the intent or purpose of this proposal, such as problem being fixed. **(Do <u>not</u> include justification here.)**			
Allow customers the option of receiving a digital ticket (emailed) in lieu of a printed ticket at time of delivery.			
14. Document to be Amended:			
_X_ NIST Handbook 44 __ NIST Handbook 130 __ NIST Handbook 133 __ NCWM Guidance Document __ NCWM Bylaws __ NTEP Administrative Policy			
15. Cite portion to be Amended: Please file a separate Form 15 for each code, model law or regulation to be amended.			
Section 3.37, paragraph UR.3.3.			
16. Proposal: Please use ~~**strikeout**~~ to show words to be deleted and **<u>underline</u>** to show new words. **(Do <u>not</u> use track changes.)**			
Change Section 3.37, paragraph UR.3.3 to read as follows: **UR.3.3 Ticket Printer: Customer Ticket**. – Vehicle-mounted metering systems shall be equipped with a ticket printer. A copy of the ticket issued by the device shall be left with the customer at the time of delivery or as otherwise specified by the customer. **<u>For systems equipped with the capability of issuing an electronic receipt, ticket, or other recorded representation, the customer may be given the option to receive any required information electronically (e.g., via email, cell phone, website, etc.) in lieu of a hard copy.</u>**			
17. Justification: Please include national importance, background on the issue, and reference to supporting data or documents.			
1) Our customers are requesting receipt of delivery ticket via email.			

2) We deliver bulk cooking oil to restaurants, often during non-operating hours. When nobody from the restaurant is present to receive the delivery ticket, it is stuck in or taped to the back door, and often ends up lost. Our customers are requesting that we **do not** leave a hard copy behind.
3) All of our sales are private contract sales; we do not sell to the public. Therefore, the need for a hard copy delivery ticket is not as critical as would be in a public sale setting.
4) In addition to electronic receipts, our customers are granted access to a website that shows their daily usage of cooking oil and contains direct links to electronic delivery tickets. This website will allow the customer to view all of their delivery tickets to ~~date, and~~date and is in addition to the emailed delivery ticket.
5) Our metering system is NTEP certified and in full compliance of Handbook 44. All required delivery ticket content, per Section 3.37, is captured in electronic format.

Language similar to what is being proposed above was added in 2014 to Section 1.10, Paragraph G-S.5.6 in an attempt to allow electronic delivery tickets. While this change was intended to apply to all sections of the code, it conflicts with existing language in the General Code (ref. Code Application, G-A.2) that does not allow the language in the General Code to supersede the requirements of the specific code. So in the case of Section 3.37, the code language requiring a hard copy ticket takes precedent.

18. Possible Opposing Argument's: Please demonstrate that you are aware and have considered possible opposition.

Assuming no arguments as this proposal is similar, in language and intent, to what was added in 2014 to Section 1.10, Paragraph G-S.5.6.

19. Requested Action if Considered for NCWM Agenda:

_X_ Voting Item ___ Developing Item ___ Informational Item ___ Other (Please Describe):

20. List of Attachments:

2020 MS Meeting Discussion

Members of the sector reviewed the LMD VTM LPG and MFM requirements for printed receipts as well as G-S.5.6. It was noted that no User Requirements are in Pub 14 as these are system requirements that are verified at the point of installation. Sector asked that the S&T consider that the same language is unified as currently exists in other codes. The members also suggested that the submitter should consider revising the proposed language to avoid the conflict with the 1st sentence of UR. 3.3.
Group noted that there is a new proposal in the HGM code. Group noted that a hard copy should be available if the customer wants it.

7. Proposal to change S.2.2. of the Water Meter Code, Submitted to the L&R Committee

Source: Moises Sztajnwore, TREXUS CORP..

The following proposal, shown below, was submitted to the Regional Weights and Measures Association for possible inclusion into the National L&R Committee Agenda. It is included here as information and possible discussion.

General Information

1. Date: 02/10/2020	**2. Regional Association(s):** (Not applicable for proposals to the Board of Directors or NTEP Committee) _X_ Central (CWMA) _X_ Northeastern (NEWMA) _X_ Southern (SWMA) _X_ Western (WWMA)		
3. Standing Committee:			
X Laws & Regulations __ Specifications & Tolerances __ Professional Development __ Board of Directors __ NTEP Committee			
4. Submitter's Name: **Moises Sztajnworc**	**Submitter's Organization:** **TREXUS CORP.**		
5. Address: **10305 NW 41Street Unit 223**			
6. City: DORAL	**7. State:** FL	**8. Zip Code:** 33178	**9. Country:** USA
10. Phone Number: 305-363 5944	**11. Fax Number:**	**12. Email Address:** msb@waterprofit.com	

Proposal Information

13. Purpose: Concise statement as to the intent or purpose of this proposal, such as problem being fixed. **(Do not include justification here.)**

Amend Section 3.2.2.1 by including water meters measure system

14. Document to be Amended:

_X_ NIST Handbook 44 __ NIST Handbook 130 __ NIST Handbook 133 __ NCWM Guidance Document
__ NCWM Bylaws __ NTEP Administrative Policy

15. Cite portion to be Amended: Please file a separate Form 15 for each code, model law or regulation to be amended.

Section: 3.36 Water Meters
Paragraph: S.2.2.

16. Proposal: Please use ~~**strikeout**~~ to show words to be deleted and **underline** to show new words. **(Do not use track changes.)**

S.2.2. ~~Batching Measuring Systems Only~~ Air/Vapor Elimination.

S.2.2.1. ~~Air/Vapor Elimination, Batching Measuring Systems Only~~. – **Water meters and ~~B~~batching** measuring systems 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 2017 **and 20XX**)

S.2.2.2. Directional Flow Valves. – Valves intended to prevent reversal of flow shall be automatic in operation.

17. Justification: Please include national importance, background on the issue, and reference to supporting data or documents.

Failure of water meters is demonstrated by not discriminating air from water. The water meter does not count in a similar way a turbulent fluid to a laminar fluid; therefore, the measurement is not realistic and the consumer has to pay for the air that the meter counts and not for the water.
18. Possible Opposing Argument's: Please demonstrate that you are aware and have considered possible opposition.
Hydraulic engineers argue that when transporting a fluid through a pipeline this generates turbulence due to the atmosphere, therefore air bubbles are generated in the system. This argument is physically acceptable, however the technology shows that the measurement is unrealistic and when compressing the air that passes through the counter avoid wrong measurement so the consumer will not have to pay for the air that will evaporate when using the Water, he will only pay for the water consumed.
19. Requested Action if Considered for NCWM Agenda:
_X_ Voting Item ___ Developing Item ___ Informational Item ___ Other (Please Describe):
20. List of Attachments:
White Paper technically explaining the measurement error, Water Bill before and after installed the corrective Explanatory videos demonstrating the measurement error

2020 MS Meeting Discussion

Members of the MS did not see the need to make this requirement for water meters other than for batching water meters because there wasn't a clear problem with submetering and residential meters where the lines are always flooded. The proposal Justification and Opposing Arguments sections of the Form 15 might be describing a flow conditioner rather than the use of a traditional air/vapor elimination device.

Closing Items:

8. 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.

2020 MS Meeting Discussion

Darrell Flocken (NTEP) reported that during the 2020 NCWM Interim in Riverside, CA, NIST and the NCWM Board of Directors agreed to a change in the responsibilities for the development of the meeting agenda and the writing of the meeting summary. This change removes these tasks from the NIST Technical Advisor and moves them to the responsibility of the individual Sectors. To move forward with this change, the Sector Members are tasked with creating a position assigned to an individual who will be responsible for creating these documents. I need to point out that the NIST and NTEP Technical Advisors will support the individual in these tasks. As this may be the first you heard of this change, the NTEP Technical Advisor agreed to write the Meeting Summary for the 2020 meeting.

During the discussion, Michael Keilty (Endress + Hauser Flowtec AG, USA) agreed that the sector can become self-sufficient in this area and provided comments on how his experience in performing these tasks within other organizations has helped him gain a better understanding of the issues being discussed. Tina Butcher (NIST, OWM) and Darrell Flocken (NTEP) provided

comments on how this is a shared task at the National S&T Committee for the writing of their meeting summary.

Darrell Flocken (NTEP) mentioned that he is planning to develop a sector guideline document including possible work instructions and timelines that will be usable by all sectors.

No individual was identified during the discussion and Michael Keilty (Endress + Hauser Flowtec AG, USA) and Darrell Flocken (NTEP) agreed to discuss this in more detail at a later date.

9. Meeting Location and Date of 2021 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.

(Note: The members of the Weighing Sector recommended meeting locations of Annapolis, Maryland; Pittsburgh, Pennsylvania; or Minneapolis, Minnesota.)

2020 MS Meeting Discussion

The sector members agreed that the dates for the 2021 meeting are Tuesday, September 21st and Wednesday, September 22nd, 2021. No specific location was suggested. Darrell Flocken (NTEP) shared the locations suggested by the Weighing Sector for their 2021 meeting. Darrell Flocken (NTEP) Also remined the members that when considering a meeting location, we need to be aware of the States that our members from California cannot travel too.

Michael Keilty (Endress + Hauser Flowtec AG, USA) mentioned the idea of a combined face-to-face and virtual meeting or even a full virtual meeting could be considered for future meetings. While a few positive comments were made, most members felt that a face-to-face meeting was more effective, and a virtual meeting should only be considered under special conditions.

10. Meeting Attendees

The following individuals participated in the 2020 Measuring Sector meeting.

Measuring Sector Members:

Luciano Burtini	Measurement Canada
Tina Butcher	NIST, OWM
Marc Butler	Emerson / Micro Motion
Craig Cavanaugh	Tuthill Transfer Systems
Darrell Flocken	NCWM/NTEP
John Hathaway	Murray Equipment
Dimitri Karimov	Liquid Controls, LLC
Allen Katalinic	NCWM/NTEP
Michael Keilty	Endress + Hauser Flowtec AG, USA
Louis Martinet	Measurement Canada
Richard Miller	FMC Technologies Measurement Solutions, Inc.
Randy Moses	Wayne Fueling Systems
Andre Noel	Neptune Technology Group, Inc.
Chad Parker	North Carolina
Brent Price	Gilbarco, Inc.
Randy Ramsey	North Carolina
John Roach	California

Other Participants:

Treyton Drake	Liquid Controls, LLC
Mike Manheim	NCWM/NTEP
Steve Palluth	Zenner Performance Meters, Inc.