

Endress+Hauser Flow USA, Inc. Greenwood, Indiana USA

September 28, 2022

Matthew Douglas, Acting Committee Chair  
Western Weights and Measures Association  
Specifications & Tolerances Committee

Specifications & Tolerances Agenda Items - LPG-15, MFM-15, Block 1

Dear Mr. Douglas,

Last year, at the Western Weights and Measures Association (WWMA) in Golden Colorado, your committee decided to recommend that agenda items LPG-15.1 and MFM- 15.1 remain under development and that recommendation was forwarded to the National Conference Specifications and Tolerances Committee.

At the Southern Weights and Measures Association (SWMA) Annual Meeting held the week of October 11, 2021, the S&T Committee heard comments and presented the items to the Association for a vote. Mark Lovisa from the State of Louisiana reported witnessing a Field Standard Meter used to test and place a measuring system into service. The LPG-15.1 and MFM 15.1 passed by unanimous vote to move forward for voting to the National Conference on Weights and Measures (NCWM). At the Central Weights and Measures Association (CWMA) Interim Meeting held the week of October 18, 2021, the S&T Committee heard comments and recommended that LPG-15.1 and MFM 15.1 move forward for voting at the NCWM.

At the NCWM Interim Meeting held January 10, 2022, in order to provide clarity and to avoid confusion with requirements for a fixed volume standard, I asked the NCWM S&T committee to revise the titles of LPG 15.1 and MFM 15.1 N.3.2 to Field Standard Meter Test. That revised language is before your committee in the WWMA S&T Agenda.

I exhibited a Coriolis mass flowmeter that is used as a Field Standard Meter. I also provided a presentation on the topic of Field Standard Meters showing calibration methods, test data from gravimetric testing and captive displacement proving, test draft size, NTEP certification and examples of field standard meters / master meters. The edited presentation is available on the NCWM website.

I would note that the NCWM January 2022 Interim Meeting, S&T Committee comments for items LPG 15.1 are found on your agenda page S&T 208 lines 27 through page S&T 209 line 10 and the MFM 15.1 are found on your agenda page S&T 217 line 23 through page S&T 218 line 9. However, there is an error on S&T 209 lines 11\_15 which attributes Ms. Tina Butcher as submitter of the item. Those are her comments regarding Block 8. The NCWM July 2022 Annual Meeting, S&T Committee comments for items LPG 15.1 and MFM-15 combined are found on your agenda page S&T 218 lines

10 through line 15

At the CWMA Annual Meeting held the week of May 23, 2022, the S&T Committee heard from Mike Johnson with the State of Nebraska. He gave a presentation of the Field Standard Meters that the State uses. They have a three-inch meter mounted on a trailer and two one-inch meters. He commented about the ease use of the equipment and their ability to test multiple meters at one location in a very short time. Ivan Hankins provided a similar comment where he witnessed LPG meter testing which was completed in a very short time. The Association voted on LPG-15.1 and MFM 15.1. The items passed by unanimous vote to move forward for voting to the National Conference.

At the NCWM Annual meeting in the week of July 11, 2022, the S&T Committee took comments from me regarding the status of development of LPG 15.1 and MFM 15.1. I informed the committee of the recommendations from the Southern and Central associations. The NCWM S&T Committee provided no comments or recommendations to me and did not discuss these items in their work session.

After reviewing other Measuring Device Codes, I am now proposing to amend Handbook 44 LMD-23.1, VTM-23.1, and MLK-23.1. These items are identical to the LPG-15 and MFM-15 items that were voted and accepted at the SWMA and CWMA Annual Meetings. These items address the minimum test draft size when using field standard meters to evaluate Liquid Measuring Devices, Vehicle Tank Meters and Milk Meters. This language is similar to the descriptions of test drafts requirements in many of the Handbook 44 device code sections. The NCWM S&T Committee Chairman recommended that these three new items be presented as a singular block. These items are on your agenda as Block 1.

At the CWMA Interim Meeting held the week of August 29th, S&T Committee reviewed the previous decision of the Association to forward items LPG 15.1 and MFM 15.1 and also then recommended that Block 1 should move forward together with a voting status to the NCWM for adoption at the NCWM Annual Meeting in July 2023.

Field standard meters provide accurate, reliable, and efficient means for State inspectors and authorized service companies to place into service and subsequently verify measuring systems. These field standard meters meet the 1/3 performance requirement compared to the measuring systems that they are testing. As with any standard, these field standards will be provided with traceable calibration documentation. Maintenance and operational training will be provided as well.

The use of these meters can increase field inspection productivity with shorter set-up and operation time. These meters can be designed to be compact and easily transported. Specialized transportation trucks are not needed.

Regarding the 2022 WWMA Annual Meeting Specifications and Tolerances Agenda items:

- 1) Agenda items in Block 1: LMD-23.1, VTM-23.1, and MLK-23.1 are identical to the items LPG-15.1 and MFM-15.1 which were accepted by the SWMA and CWMA by unanimous vote at

the Annual Meetings in October 2021 and May 2022.

- 2) Agenda items in Block 1: LMD-23.1, VTM-23.1, and MLK-23.1 require no further development.
- 3) Please present the items LPG 15.1, MFM 15.1, LMD-23.1, VTM-23.1, and MLK-23.1 to the Western Weights and Measures Association for adoption at the 2022 Annual Meeting to move forward for adoption at the NCWM 2023 Annual Meeting.

Thank you for your consideration.

Michael Keilty  
Standards and Metrology Manager

September 26, 2022

Mr Chairman and Committee Members

Below are additional comments made during open hearings

I introduced the LPG and MFM items to recognize field standard meters and the smaller draft size needed when using them. My goal was to identify technology and aid the States. Some representatives from States, namely Minnesota, Ohio, Florida and Kansas, have reported that having language in NIST Handbook 44 will enable them and registered service agents to use field standard meters. Without the language, they cannot enforce Handbook 44 if field standards are used.

I did not recommend to amend the current language for test drafts in the LPG, MFM, MLK, VTM or LMD codes that imply the use of neck-provers. I did not want to effect changes in anyway objectionable to the neck-prover manufacturer.

The original recommendation included the addition of a definition in Appendix D. I removed that proposal because of the varied definitions which refer to meters used in the CDL, CLM, and HGM codes.

Testing milk and chemical meters is difficult when standards are not available. Some registered service agents use both provers and field standard meters depending where they are testing. The availability of dedicated provers for milk and chemicals is not often easy to find. Scales are very difficult to use to test meters used to fill railcars. There are applications where testing is impractical.

Please forward LPG 15-1, MFM 15-1, VTM 23-1, MLK 23-1 and LMD 23-1 as voting items.

Thank you for your consideration.

Michael Keilty  
Standards and Metrology Manager  
Endress+Hauser Flow USA, Inc.