

Specifications and Tolerances (S&T) Committee Interim Agenda

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Weights and Measures

Reference
Key Number

300 INTRODUCTION

The Specifications and Tolerances (S&T) Committee (Committee) will address the following items at its Interim Meeting. All items are listed below in Table A by Reference Key Number. The headings and subjects apply to National Institute of Standards and Technology (NIST) Handbook 44, “Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices.” The Appendices to the Agenda are listed in Table A. The acronyms for organizations and technical terms used throughout the agenda are identified in a glossary in Table B. In some cases, background information will be provided for an item. The fact that an item appears on the Agenda does not mean that the item will be presented to the Conference for a vote. The Committee will review its Agenda at the Interim Meeting and may withdraw some items, present some items for information meant for additional study, issue interpretations, or make specific recommendations for change to NIST Handbook 44 which will be presented for a vote at the Annual Meeting.

The “Item(s) Under Consideration” (formerly designated as “Recommendations”) are statements of proposals and are not necessarily those of the Committee. Suggested revisions to the Handbook are shown in **bold face print** by ~~striking out~~ information to be deleted and underlining information to be added. Requirements that are proposed to be nonretroactive are printed in **bold-faced italics**.

Note: The policy of NIST is to use metric units of measurement in all of its publications; however, recommendations received by the National Conference on Weights and Measures (NCWM) technical committees and regional weights and measures associations have been printed in this publication as submitted. Therefore, the report may contain references to inch-pound units.

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The items in Appendix C are available on the NIST Weights and Measures Website at: <http://www.nist.gov/pml/wmd/index.cfm> under Publications/Pub 15 and at the NCWM website at: <http://www.ncwm.net>.

Table B
Glossary of Acronyms

BCS	Belt-Conveyor Scales	NTEP	National Type Evaluation Program
CC	Certificate of Conformance	NTETC	National Type Evaluation Technical Committee
CWMA	Central Weights and Measures Association	NW&SA	National Weighing and Sampling Association
EPO	Examination Procedure Outline	OEM	Original Equipment Manufacturer
GS	NTETC Grain Analyzer Sector	Pub 14	NCWM Publication 14
GIPSA	Grain Inspection Packers & Stockyards Administration	RMFD	Retail Motor-Fuel Dispenser
HB 44	NIST Handbook 44	SI	International System of Units
HB 130	NIST Handbook 130	SMA	Scale Manufacturers Association
LMD	Liquid-Measuring Device	SWMA	Southern Weights and Measures Association
LPG	Liquefied Petroleum Gas	WG	Work Group
MS	NTETC Measuring Sector	WMD	NIST Weights and Measures Division
NCWM	National Conference on Weights and Measures, Inc.	WS	NTETC Weighing Sector
NEWMA	Northeastern Weights and Measures Association	WWMA	Western Weights and Measures Association
NH ₃	Anhydrous Ammonia	USNWG	NIST/OIML U.S. National Working Group
NIST	National Institute of Standards and Technology	VTM	Vehicle-tank Meters
“Handbook 44” (HB 44) means the 2010 Edition of NIST Handbook 44, “Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices”			
“Handbook 130” (HB 130) means the 2009 Edition of NIST Handbook 130 (including subsequent amendments), “Uniform Laws and Regulations in the Areas of Legal Metrology and Fuel Quality”			
Note: NIST does not imply that these acronyms are used solely to identify these organizations or technical topics.			

Details of All Items
(In Order by Reference Key Number)

310 GENERAL CODE

310-1 G-S.8. Provision for Sealing Electronic Adjustable Components, G-S.8.1. Adjustment Mode Indication, and Definitions for Adjustment and Adjustment Mode

Source: 2010 Carryover Item 310-1. This item originated from the Southern Weights and Measures Association (SWMA) Committee and first appeared on the Committee’s 2008 Agenda.

Purpose: The purpose of the proposed changes is to clarify what is considered an effective method of sealing metrological features and what information is required to be indicated and recorded when a device is in a metrological adjustment mode.

Item Under Consideration: The Committee is currently waiting for the Weighing Sector (WS) recommendations to amend the procedures for evaluating sealing requirements in the weighing devices section in NCWM Publications 14 before taking further actions on the following proposal to amend General Code paragraph G-S.8. and subsequent subparagraphs.

G-S.8. Provision for Sealing Electronic Adjustable Components. - A device shall be designed with provision(s) for applying a security seal that must be broken, or for using other approved means of providing security (e.g., data change audit trail available at the time of inspection), before any change that detrimentally affects the metrological integrity of the device can be made to any electronic mechanism. **That is:**

- (a) **It shall not be possible to apply a physical security seal to the device while it is in the calibration and/or configuration mode nor to access the calibration and/or configuration (adjustment) mode when sealed; or**
- (b) **The calibration and/or configuration adjustments are protected by an approved method for providing security (e.g., data change audit trail).**

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

During any mode of operation in which adjustments can be made, devices shall not provide indications that can be interpreted, transmitted into memory, or printed as a usable (legal) measurement value. *

(Added 1985) (Amended 1989, ~~and~~ 1993, **and 201X**)

[Nonretroactive as of January 1, 1990]

***[Nonretroactive as of January 1, 201X]**

G-S.8.1. Adjustment Mode Indication. For electronic devices protected by an approved means for providing security (e.g., data change audit trail), the device shall clearly and continuously indicate and print, if equipped with a printer, that the calibration and configuration adjustment modes are enabled.

[Nonretroactive as of January 1, 201X]

Renumber subsequent paragraphs.

Add applicable definitions to Appendix D from a white paper on the “Metrological Requirements for Audit Trails” adopted by NCWM in July 1993.

Adjustment mode. An operational mode of a device which enables the user to make adjustments to sealable parameters, including changes to configuration parameters.

Adjustment. A change in the value of any of a device's sealable calibration parameters or sealable configuration parameters.

Background/Discussion: At its fall 2007 meeting, the SWMA received a proposal to address inconsistent application of the requirements in paragraph G-S.8. by the National Type Evaluation Program (NTEP) weighing labs by modifying paragraph G-S.8. to ensure that: (1) a device could not be sealed in the configuration mode and continue to operate normally; and (2) to require devices to;

- clearly indicate (and print when interfaced with a printer) that it is in an adjustment mode;
- not operate (present usable measurement values); or
- exit the adjustment mode after 60 minutes.

The proposal, as submitted in the Committee’s 2008 Interim Agenda, only required that a device continuously indicate when access to the set-up mode was enabled.

At the 2008 Interim Meeting, the Committee received comments during the open hearing supporting the intent of the proposed language. However, some expressed concern that automatically exiting the adjustment(s) mode after 60

minutes is not a workable solution due to numerous examples where either it could be used fraudulently during the 60 minute period, or the 60 minute period was not enough time to complete necessary adjustments during calibration.

The Committee agreed that to comply with paragraph G-S.8., a device must be equipped with an approved audit trail or that a physical seal is required to be broken before any metrological adjustments can be made.

The Committee also believed that an indication that the adjustment mode is in operation is only necessary for devices with approved electronic methods of sealing. Additionally, the adjustment mode indicator should not be operable during normal weighing or measuring operations. The Committee agreed that if a device designed for commercial applications is capable of being “sealed” and still allows external or remote access to the calibration or configuration mode, then that device is clearly in violation of the current provisions in G-S.8. Provision for Sealing Electronic Adjustable Components and G-S.2. Facilitation of Fraud and, therefore, no change to the existing language in paragraph G-S.8. is needed.

In 2008, the Committee amended the proposal due to continuing concerns raised about inconsistent interpretations of G-S.8. by NTEP participating laboratories.

At the 2008 Annual Meeting, the Committee heard comments from the Weights and Measures Division (WMD) noting that the alternate language submitted by the Scale Manufacturers Association (SMA) would require that *all* devices provide the operator with indications that a device is in the calibration mode. This would encompass mechanical and electronic devices and devices that use Category 1 physical seals. Additionally, WMD suggested the Committee consider that a device does not need indications that it is in a calibration or configuration mode if it is incapable of providing indications that can be interpreted, printed, or transmitted to a memory device as a correct measurement value.

The Committee agreed with comments from the 2008 Central Weights and Measures Association (CWMA) Annual Meeting and from WMD and amended paragraph G-S.8.1. to:

- delete the references to the sealing categories since they are not consistently referenced in all codes;
- clarify printing requirements; and
- include an option that the device not operate or provide metrological indications that can be interpreted or transmitted into memory or to recording elements while in the adjustment mode.

Just prior to the 2008 voting session, the Committee noted that the revised language in G-S.8.1.(a) was inadvertently changed to where it could be literally read that the physical seal itself disabled access to the adjustment mechanisms, instead of preventing access to the mechanism. Consequently, the Committee changed the status of the item from Voting to Information. The Committee believed that the intent of the recommendation is to ensure that the access to the calibration and configuration modes is disabled.

The Committee redrafted the language in paragraph G-S.8.1. in an attempt to clarify the intent of the proposal and submitted the revised draft to the regional Weights and Measures associations and other interested parties for further review and consideration.

During the 2009 NCWM Interim Meeting, the Committee reviewed comments from the fall 2008 Western Weights and Measures Association (WWMA), CWMA, and Northeastern Weights and Measures Association (NEWMA) meetings that supported the language submitted to the regional Weights and Measures associations and other interested parties. At its fall 2008 Annual Meeting, the SWMA recommended that: (1) additional work is needed before the item is ready for a vote; (2) the NCWM S&T Committee may wish to consider at least incorporating interpretations and guidelines for the existing language in its reports; and (3) this item should remain an Information item on the NCWM S&T agenda. After considering these comments, the Committee recommended that this item move forward as an Information item to allow further review, comments, and recommendations.

WMD added that it had received comments questioning how the application of a physical seal (as recommended by the manufacturer and listed on the Certificate of Conformance [CC]) ensures that the calibration and configuration

modes are disabled. Specifically, what does that presence of the physical seal (pressure sensitive or lock and wire) do to the device that disables the calibration and configuration modes?

In considering these comments, WMD suggested that the Committee consider the following changes:

- Modify G-S.8. Provision for Sealing Electronic Adjustable Components to reduce the potential for misinterpreting the paragraph by outlining the different requirements between physical seals and electronic seals (audit trails);
- Add new specifications for externally and remotely configurable devices since remotely configurable devices are required to have an audit trail in several codes;
- Amend G-UR.4.5. Security Seal to require the user to verify that the device is correctly configured to disable the external configuration feature to deter service agents from leaving a device configured with external access to the adjustments;
- Add definitions from the white paper on the “Metrological Requirements for Audit Trails” adopted by NCWM in July 1993 since there is some confusion on the meaning of “adjustment” and “adjustment mode;” and
- Add a new definition for “externally configurable (external and on the device)” to distinguish it from “remotely configurable (external but not part the device).”

Mr. Steve Patoray, Consultants on Certification, LLC, expressed concerns that the language proposed in the 2009 Interim Agenda would require a manufacturer to design a device where the application of the physical seal (e.g., lock and wire, pressure sensitive, etc.) would disable external access to the configuration mode. He believes that the language in the proposal would force the manufacturer to redesign access covers to devices so that the cover disables the external adjustment capability. Consequently, the application of the security seal secures the cover in place and then, if broken, provides an indication that the device may have been adjusted.

The Committee also received a comment from Mr. Will Wotthlie, Maryland, stating that he was concerned with the language that requires that the physical seal “shall ensure” that external access to the configuration mode is disabled. He provided examples of mechanical automatic temperature compensation (ATC) elements where a specially designed sealing pin had to be installed before the physical seal could be applied and where electronic motor-fuel devices have a specially designed cover plate where the closing of the cover plate disables the electronic configuration. The manufacturer has the option under this proposal to either specially design the device with a physical seal as a method of sealing (e.g., a specially designed sealing pin on the aforementioned mechanical ATC element) or design the device with an electronic method of sealing (i.e., an approved audit trail).

Several manufacturers stated that this proposal was not ready and that designs for the method of providing security to the metrological adjustments should be left to the manufacturers. Mr. Flocken, Mettler Toledo, added that the intent of the proposal is that the manufacturer can either design a device so that a security seal cannot be applied without placing the device into the proper mode *or* design the device so that it has an approved audit trail.

The Committee agreed with the comments that the proposal is not ready to become a Voting item and suggested that further development to the proposal address the following subjects:

1. Avoid language that allows the indication of usable metrological values while a device is in the adjustment mode for devices that do not have an event logger.
2. Recognize that more than one method of sealing is acceptable on a single device; for example, using a lock and wire seal for the mechanical adjustments and an audit trail for electronic adjustments.
3. Delete or modify references to specific “categories of devices” since the sealing category criteria differ among the specific codes and not all HB 44 codes have such criteria.

4. Require an obvious indication when a device is being adjusted if its method of sealing is a physical security seal.
5. Clarify that the application of a physical security seal to a specially designed and sealable plate or cover that disables external access to the configuration and adjustment mode is not the only method to seal adjustable components.

At its spring 2009 meeting, the CWMA received a comment from the SMA along with a revised version of its previous recommendation that removed the word “adjustment” where appropriate; added the word “modes;” and removed the reference to “Category 1, 2, and 3” in G-S.8.1.(b). The CWMA supported the intent of the SMA proposed language from its 2009 spring meeting and believed that the specific wording should be thoroughly reviewed and that the terms “calibration and configurations modes” are not widely understood. The CWMA suggested that the definitions for the word “adjustment” and “adjustment mode” from the 1993 white paper on Audit Trails be included in HB 44 by incorporating some of the definitions into HB 44.

Mr. Patoray submitted comments to the NCWM and NEWMA S&T Committees providing additional background information on how some devices can have external access to the adjustment mode after the application of a physical seal (and not equipped with an audit trail). In his May 2009 letter to the Committees, he added that the NTEP lab evaluators believe that the method described above does not provide a truly “effective method of sealing.” Mr. Patoray stated there may be nothing wrong with the current G-S.8. wording as part of the general code and this issue does need to be addressed in each of the individual or specific codes. There may be several solutions for newly designed devices, but it is not the role of HB 44 to attempt to actually put design constraints on manufacturers, only to place requirements that must be met by some type of design solution.

At its spring 2009 meeting, NEWMA supported the intent of this item. However, NEWMA is concerned that this item is getting over-complicated and asks the Committee to consider requiring a simple enunciator indicating the device is in “cal mode.” NEWMA also reviewed comments from the SMA 2009 spring meeting supporting the intent of the item submitted in its revised proposal to the Committee.

During the 2009 NCWM Annual Meeting, the Committee received comments during the open hearing that no action may be needed and that the existing language in HB 44 is sufficient. Oregon and Maryland believe that requirements for sealing are needed by the NTEP labs and field officials in order to consistently interpret and apply sealing requirements.

The Committee believes that all parties agree with the intent of the proposal, which is to prevent metrological adjustments to weighing and measuring devices without breaking a physical seal, or indicate through other approved means (e.g., audit trail) that adjustments have been made while providing flexibility for manufacturers. Both the WMD and SMA proposals included language that restates the existing language in G-S.8., but is essentially reformatted for clarification. Additionally, both proposals included new requirements for providing indications when a device is in adjustment mode. WMD included further language to address devices that may have more than one method of sealing.

After assessing the comments and discussing the issue, the Committee agreed that the proposal *was not ready* for a vote and, consequently, did not include proposed language in its Interim and Annual Reports. However, the Committee agreed to keep this item on its Agenda as an Information item with the expectation that proposed language would be submitted for the 2010 Interim Meeting.

At its 2009 meeting, the NTETC Weighing Sector (WS) reviewed the comments from the S&T Committee, the background information in the NCWM 2008 Annual and 2009 Interim Reports, and the summary of proposals provided by the NIST Technical Advisor. The WS believes that existing language in HB 44 is sufficient. The WS has amended its evaluation procedures so that a physical seal will not be accepted as the means to secure metrological adjustments if the scale allows external access to the adjustment mode after an adjustment has been accepted by the device. In these cases, the device must be designed with a data change audit trail. The WS amended Pub 14 for digital electronic scales to require that devices equipped with:

1. provision(s) for applying a physical security seal that must be broken before any change that detrimentally affects the metrological integrity of the device can be made to any electronic mechanism; or
2. other approved means of providing security to document any change that detrimentally affects the metrological integrity of the device can be made to any electronic mechanism (e.g., data change audit trail available at the time of inspection).

At its fall 2009 meeting, the CWMA commented that the Committee's redrafted language in the 2009 NCWM Interim Report still had some contradictory language. However, the CWMA did not define what is considered "a clear indication" of a device's calibration or configuration status. The CWMA recommended this item remain Informational in 2010, and amended the NCWM Committee's recommendation by limiting the indication that the device is in the adjustment mode only to devices with approved electronic method of sealing (e.g., audit trails). Devices with an effective security seal would not have to indicate or print that it was in the adjustment mode.

During the fall 2009 WWMA Annual Technical Conference, Mr. Flocken, Mettler Toledo, speaking as chairman of the WS, reported the Sector's position as stated above, and noted that the Sector can develop additional guidance in NCWM Pub 14 to ensure uniform interpretation of the requirement during type evaluation. Mr. Lou Straub, Fairbanks Scales, representing SMA, stated that SMA supported the intent of the proposed changes, but had presented specific suggestions for modifying the language to the NCWM S&T Committee as noted in the 2009 CWMA Annual Meeting discussions. Mr. Straub noted that SMA had not met since prior to the 2009 NCWM Annual Meeting, so SMA would need to reconsider any additional thoughts presented during that meeting and the August 2009 WS meeting.

The WWMA reviewed this issue and expressed concerns about a device which could be sealed in a mode that would allow access to calibration or configuration changes without breaking a seal. The WWMA agreed with the position of the NCWM S&T Committee that the current language in paragraph G-S.8. requires that a security seal be broken before a metrological change can be made to a device (or other approved means of security, such as an audit trail provided). Thus, once a security seal is applied, for example, it should not be possible to make a metrological change to the device without breaking that seal. Since this philosophy addresses provisions for protecting access to metrological adjustment, the philosophy should be applied consistently to all device types. Therefore, the Committee recommends this remain an Informational item.

At its October 2009 meeting, the NTETC Measuring Sector agreed that Measuring Devices with NTEP CCs have been evaluated to either:

1. not function in the calibration or configuration mode;
2. not be sealed in the calibration or configuration mode; or
3. clearly indicate the device is in the calibration or configuration mode.

The NTETC Measuring Sector (MS) agreed that these options reflect the intent of paragraph G-S.8. and, because the intent of the paragraph is understood and appropriately applied by the measuring community, the Sector recommends that no changes be proposed to paragraph G-S.8.

At its fall 2009 Annual Meeting, the SWMA recommended that this proposal be made an Information item. The SWMA agreed that a device should be designed so that it can either not operate or not be capable of indications that might be interpreted as a valid measurement while it is in the calibration or configuration mode. The SWMA S&T Committee is concerned that a device left to operate while in this mode may facilitate fraud since adjustments might be inadvertently or intentionally made to metrologically significant features.

The SWMA is interested in the input the NCWM S&T Committee receives from the fall 2009 Technical, Industry, and Regional Weights and Measures Association meetings on this issue for the 2010 NCWM Interim Meeting. The SWMA Committee recommended that the final modifications to the General Code ensure that the intent of the requirement is clear and is uniformly interpreted.

NEWMA supported this item remaining as Informational at its fall 2009 meeting.

At the 2010 NCWM Interim Meeting, the Committee received testimony from the SMA restating its November 2009 position that supported the conclusions of the 2009 Weighing and Measuring Sectors recommending that no change to HB 44 is required as the wording of G-S.2. and G-S.8. is sufficient. WMD states that it remains concerned about devices which could be sealed while allowing access to calibration or configuration changes without breaking that seal. WMD agreed with the position of the NCWM S&T Committee that the current language in paragraph G-S.8. requires that a security seal be broken before a metrological change can be made to a device (or other approved means of security such as an audit trail provided). Thus, once a security seal is applied, it should not be possible to make a metrological change to the device without breaking that seal. Since this philosophy addresses provisions for protecting access to any metrological adjustment, the philosophy should be applied consistently to all device types. WMD encouraged the Committee to reiterate in its Interim and Final Reports the correct interpretation of G-S.8. as the Committee and the MS have done in the past, and as demonstrated in more recent actions by the WS.

The Committee agreed with comments that no changes are needed to paragraph G-S.8. and that type evaluation procedures have been amended in applicable sections of NCWM Pub 14 to address the issues of incorrectly applying the requirements in G-S.8. The Committee also noted that there was some confusion regarding the meaning of the terms “adjustment” and “adjustment mode” in the CWMA Annual Meeting reports.

The Committee received no comments addressing potential inconsistent interpretations of the requirements by field officials, requirements for adjustment mode indications, and limitations on metrological indications while in the adjustment mode in any proposals. Consequently, the Committee developed a revised proposal that:

1. did not change the existing text in G-S.8.;
2. added language that restates the intent of G-S.8.;
3. added language to address metrological (legal for trade) measurements while in an adjustment mode;
4. added a new paragraph G-S.8.1. that requires an indication and, recorded representations (if equipped with a printer) while in the adjustment mode; and
5. added new definitions for “adjustment” and “adjustment mode” from the white paper on the “Metrological Requirements for Audit Trails” adopted by NCWM in July 1993 to facilitate a common understanding of the terms.

The Committee also recommended that the amended proposal be given Informational status to allow interested parties sufficient time to analyze and comment on the most recent language that appears in the “Item Under Consideration.”

Key Points Considered by the Committee:

- All agree that the intent of the proposal is that metrological adjustments shall be secured with: 1) physical seals that must be broken to access metrological adjustments; or 2) other approved means (e.g., data change audit trails) that indicator that metrological adjustments have been made.
- Devices must be equipped with either an approved audit trail or designed such that a physical seal is required to be broken before performing metrological adjustments.
- For devices with approved *electronic method* of sealing, an indication that the adjustment mode is in operation is necessary unless the device does not operate or provide metrological indications that can be interpreted or transmitted into memory or to recording elements.
- Devices that use physical seals to secure metrological adjustments are clearly in violation of G-S.8. if they allow external or remote access to metrological adjustment modes without breaking a physical seal.

- Any changes to General Code paragraph G-S.8. should ensure that the intent of the requirement is clear and is uniformly interpreted.

At NEWMA's May 2010 Annual Meeting open hearing, Mr. Flocken, speaking as chairman of the NTETC Weighing Sector, stated that the Sector concluded at its August 2009 meeting that existing language in HB 44 is sufficient and that the Sector has established a small work group (WG) to review existing type evaluation criteria to suggest procedures in Publications 14 to verify that devices are designed with effective means to ensure compliance with HB 44. Consequently, NEWMA stated that it will await the WS recommendations for changes to Pub 14 before taking a position on this item.

At its spring 2010 annual meeting, the CWMA agreed with a proposal from Mr. Paul Lewis, Rice Lake Weighing, to delete the subparagraph (a) in the item under consideration since it restates the language in G-S.8.

At the Committee's 2010 NCWM Annual Meeting open hearings, Mr. Flocken, Mettler Toledo, speaking as chairman of the NTETC Weighing Sector restated his report from the spring 2010 NEWMA Meeting. Mr. Straub, Fairbanks Scales, speaking on behalf of the SMA stated that SMA opposes this item and recommends that this item be Withdrawn. The SMA believes that the current wording is a step back from previous proposals. The SMA continues to support the recommendation from the 2009 Weighing and Measuring Sectors stating that no change to HB 44 is required because the wording of G-S.2. and G-S.8. is sufficient.

WMD suggested that it might be appropriate for the Committee to consider withdrawing the item. In its comments to the NCWM in 2008, WMD stated that its interpretation of G-S.8. and S.1.11. Provision for Sealing, in the Scales Code, clearly does not allow a device to be "sealed" in a mode that allows a change that detrimentally affects the metrological integrity of the device without breaking that "seal." WMD suggested that the Pub 14 procedures for evaluating the method of sealing in the checklist for electronic scales be amended to more closely align it with the procedures in the liquid-measuring devices (LMD) checklist Section 9 which states:

Measuring elements shall be designed with adequate provisions to prevent changes from being made to the measuring element or the flow rate control (if the flow rate control affects the accuracy of deliveries) without evidence of the change being made. These provisions can be an approved means of security (e.g., data change audit trail) or physically applying a security seal which must be broken before adjustments can be made. When applicable, the adjusting mechanism shall be readily accessible for the purposes of affixing a security seal.

The Committee agreed that the current language in paragraph G-S.8. requires that a security seal be broken before a metrological change can be made to a device (or that other approved means of security such as an audit trail be provided). Thus, once a security seal is applied, for example, it should not be possible to make a metrological change to the device without breaking that seal. Since this philosophy addresses provisions for protecting access to metrological adjustment, the philosophy should be applied consistently to all device types.

The Committee is concerned about a device which could be sealed in a "mode" that would allow access to calibration or configuration changes without breaking a seal. Since the NTEP tests and procedures are based on interpretations of HB 44, the Committee supports the efforts of the W S and is recommending that this item remain and Information item until the WS can review and revise (as needed) Pub 14 type evaluation procedures to verify compliance with G-S.8. provisions for sealing consistent with the Committee's interpretation of G-S.8. stated in the previous paragraph.

At its August 2010 Annual Meeting, the WS: 1) reviewed the sealing procedures in Pub 14 Scales type evaluation checklist and procedures; 2) compared them with similar type evaluation criteria in Pub 14 for LMD; and 3) reviewed applicable HB 44 sealing requirements in the General, Scales, and LMD codes. Prior to the 2010 meeting of the WS, a small WG was formed to develop more detailed procedures for determining compliance of the methods for sealing and requested the WS to consider its recommendations for Pub 14, DES Section 10. The WS reviewed the recommendations and was asked to determine whether the guidance in the WG recommendation ensures uniform interpretation of sealing requirements during type evaluation.

During the discussions, Mr. Flocken, WS Chairman, reported that the goal is to add additional guidance in Pub 14. Mr. Jim Truex, NTEP Administrator, stated that NTEP has received numerous reports of scales found left in the calibration/configuration mode with physical seals intact. Mr. Nigel Mills, Hobart Corp., added that the use of the phrase “clearly indicate” in the first paragraph of the WG recommendation is ambiguous without additional clarification and is subject to incorrect interpretations. The WS discussed various examples of indications intended to clearly indicate that a device is in a calibration/configuration mode. Some of the examples were considered by the WS to be acceptable while other examples were deemed unacceptable (e.g., flashing weight indications or blanking units of measure). Mr. Truex suggested that as a starting point a small list of acceptable and unacceptable means of providing clear indication be developed by the WS. Mr. Steve Cook, NIST Technical Advisor, volunteered to develop a short list as a starting point before the conclusion of the meeting. The WS reviewed the list and discussed additional acceptable and unacceptable indications. Mr. Cook noted that the list should not be limiting or all inclusive and that other indications may be acceptable. Mr. Flocken suggested that the WG recommendation, with suggestions from the WS, be forwarded to the S&T Committee and SMA for consideration prior to the 2011 NCWM Interim Meeting.

The WS agreed with the revised proposal to amend Pub 14 Scale Section 10 and recommended it be forwarded to the S&T Committee and SMA for consideration prior to the 2011 NCWM Interim Meeting. The WS also agreed to forward the amended language for Pub 14 to the S&T Committee with a recommendation that the S&T item be withdrawn from the Committee’s Agenda. In summary, the recommendation to amend Pub 14 Scale Section 10 includes new language in the introduction of Section 10 to read as follows:

Sealing - General

In addition to satisfying the physical security sealing requirement; the presence of a physical seal shall clearly indicate that the setup or configuration mode (any mode permitting access to any or all sealable parameters based upon the application of the *Philosophy for Sealing in Pub 14*) of the device cannot be accessed without additional actions (e.g., removal of a jumper, pressing a key or switch, etc.) only possible after the removal of the seal.

If the use of a physical seal is the only approved method of sealing,; it shall not be possible to apply the physical seal with the device in the setup or configuration mode (any mode permitting access to any or all sealable parameters based upon the application of the *Philosophy for Sealing in Pub 14*) unless the device has a clear indication that the device is in this mode. See the list of acceptable and unacceptable indications below.

Indications representing that the device is configured with the setup or configuration mode enabled (i.e., any mode permitting access to any or all sealable parameters)	
This list is not limiting or all-inclusive; other indications may be acceptable.	
Acceptable Clear Indications	Indications NOT Acceptably Clear
Unusable weight indications Example: C100.05E	C 100.05 lb
“not HB 44 ” annunciator	Any digit in the weight differentiated by size, shape, or color
“CAL” annunciator (single or mixed case)	Weights w/o units Example. 100.05
“Set-up” annunciator (single or mixed case)	Flashing weight value
“Config” annunciator (single or mixed case)	Weight with no annunciators displayed
	Weight with all annunciators displayed

Additionally, checklist language was recommended to document the procedures for entering the calibration/configuration mode procedures for exiting the calibration/configuration mode (e.g., momentary pushbutton, jumper, slide/toggle switch, etc.), and to verify that the procedures comply with the proposed “General Sealing” paragraphs above. The WS also recommended that the procedures for entering and exiting the calibration/configuration modes be documented on the NTEP CC in the section on “Sealing” so that a field official is able to verify that metrological adjustments are not accessible.

At its fall 2010 Interim Meeting, the CWMA Committee stated that the item has been on the agenda since 2008 and has had sufficient time for development. The CWMA noted that no comments were received during its open hearing. Therefore, the CWMA S&T Committee believes that this should be moved forward as a Voting item. (The CWMA did not have a quorum to vote on its agenda).

During the fall 2010 WWMA Annual Technical Conference, Mr. Flocken, Mettler Toledo, speaking on behalf of the SMA, restated its position that this item be withdrawn. Mr. Flocken, speaking as chairman of the WS restated the history of the issues that initiated the original proposals. At the August 2009 WS meeting, it was noted that there were problems at the NTEP weighing labs due to insufficient guidance in Pub 14. Mr. Cook, NIST Technical Advisor to the WS, speaking on behalf of the WS, provided the WWMA with a brief review of the WS recommendations to amend the weighing devices section of Pub 14 at its 2010 meeting. The WWMA recommended that this remain an Information item until the NCWM S&T Committee confirms that the WS recommendations comply with the previous Committee’s interpretation of General Code paragraph G-S.8.

During its fall 2010 Annual Meeting, the SWMA heard comments from Mr. Straub, Fairbanks Scales, and Mr. Gordon Johnson, Gilbarco, indicating that no changes are needed to paragraph G-S.8. The SWMA S&T Committee also received information from the WWMA and the WS regarding work being done in the Weighing Sector to refine criteria in Pub 14 relative to the interpretation of paragraph G-S.8. Ms. Tina Butcher, NIST WMD, and members of the WS, including Mr. Straub and Mr. Truex, reported that the WS has made progress on developing proposed changes to the Scales Checklist in Pub 14 and anticipates forwarding those changes to the NTEP Committee for possible inclusion in the next edition of Pub 14. In anticipation that the Sector’s work will bring closure to this issue and encourage consistent interpretation of paragraph G-S.8., the SWMA S&T Committee agreed to recommend that this remain an Information item to allow this work to be completed.

See the 2008, 2009, and 2010 NCWM Annual Reports for additional background information.

310-2 G-S.1. Identification. – (Software)

Source: 2010 Carryover Item 310-3. This item originated from the NTETC Software Sector and first appeared on the Committee's 2007 agenda as Developing Item Part 1, Item 1.

Purpose: This proposal is intended to amend the identification marking requirements for all electronic devices manufactured after a specified date by requiring that metrological software version or revision information be identified. Additionally, the proposal suggests listing methods, other than "permanently marked," for providing the required information.

Item Under Consideration: Amend G-S.1. Identification and G-S.1.1. Location of Marking Information for Not-Built for-Purpose, Software-Based Devices as follows. (*Note that this language incorporates the March 2010 Committee acceptance of the 2010 NTETC Software Sector recommendation and the Committee's suggested language to address SMA concerns with the requirements in G-S.1. where it states that states that "all equipment . . . shall be permanently marked . . ." and G-S.1.1. that allows alternate methods, other than "permanently marked," to identify software-based devices.*):

G-S.1. Identification. – All equipment, except weights, ~~and~~ separate parts necessary to the measurement process but not having any metrological effect, and software-based devices covered in G-S.1.1. Location of Marking Information*, shall be clearly and permanently marked for the purposes of identification with the following information:

[*Nonretroactive as of January 1, 201X]

- (a) the name, initials, or trademark of the manufacturer or distributor;
- (b) a model identifier that positively identifies the pattern or design of the device;
 - (1) *The model identifier shall be prefaced by the word "Model," "Type," or "Pattern." These terms may be followed by the word "Number" or an abbreviation of that word. The abbreviation for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., No or No.). The abbreviation for the word "Model" shall be "Mod" or "Mod." Prefix lettering may be initial capitals, all capitals, or all lowercase.*
[Nonretroactive as of January 1, 2003]
(Added 2000) (Amended 2001)
- (c) *a nonrepetitive serial number, except for equipment with no moving or electronic component parts ~~and not built for purpose software-based software device;~~*
[Nonretroactive as of January 1, 1968]
(Amended 2003)
 - (1) *The serial number shall be prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required serial number.*
[Nonretroactive as of January 1, 1986]
 - (2) *Abbreviations for the word "Serial" shall, as a minimum, begin with the letter "S," and abbreviations for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., S/N, SN, Ser. No., and S. No.).*
[Nonretroactive as of January 1, 2001]
- (d) *the current software version or revision identifier for ~~not built for purpose~~ software-based electronic devices;*
[Nonretroactive as of January 1, 2004]
(Added 2003) (Amended 201X)

(1) *The version or revision identifier shall be prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required version or revision.*
[Nonretroactive as of January 1, 2007]

(Added 2006)

(2) *Abbreviations for the word "Version" shall, as a minimum, begin with the letter "V" and may be followed by the word "Number." Abbreviations for the word "Revision" shall, as a minimum, begin with the letter "R" and may be followed by the word "Number." The abbreviation for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., No or No.).*
[Nonretroactive as of January 1, 2007]

(Added 2006)

(e) *an NTEP CC number or a corresponding CC Addendum Number for devices that have a CC. The CC Number or a corresponding CC Addendum Number shall be prefaced by the terms "NTEP CC," "CC," or "Approval." These terms may be followed by the word "Number" or an abbreviation of that word. The abbreviation for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., No or No.)*
[Nonretroactive as of January 1, 2003]

The required information shall be so located that it is readily observable without the necessity of the disassembly of a part requiring the use of any means separate from the device.

(Amended 1985, 1991, 1999, 2000, 2001, 2003, ~~and~~, 2006 ~~and~~ **201X**)

G-S.1.1. Location of Marking Information for ~~Not Built For Purpose~~ all Software-Based Devices. – For ~~not built for purpose~~, software-based devices, either:

(a) *The required information in G-S.1. Identification. ~~(a), (b), (d), and (e)~~ shall be permanently marked or continuously displayed on the device; or*

(b) *The CC Number shall be:*

(1) *permanently marked on the device;*

(2) *continuously displayed; or*

(3) *accessible through one or, at most, two levels of access. an easily recognized menu and, if necessary, a submenu. Examples of menu and submenu identification include, but are not limited to, "Help," "System Identification," "G-S.1. Identification," or "Weights and Measures Identification."*

(i) For menu based systems, "Metrology," "System Identification," or "Help."

(ii) For systems using icons, a metrology symbol "(M)", "(SI)," or a help symbol ("?", "i," or an "i" within a magnifying glass).

Note: *For (b), clear instructions for accessing the information required in G-S.1. (a), (b), and (d) shall be listed on the CC, including information necessary to identify that the software in the device is the same type that was evaluated.*

[Nonretroactive as of January 1, 2004]

(Added 2003) (Amended 2006 ~~and~~ **201X**)

Background/Discussion: In 2005, the Board of Directors (BOD) established an NTETC Software Sector. One of the Sector's tasks, is to recommend HB 44 specifications and requirements for software incorporated into weighing and measuring devices, which may include tools used for software identification.

During its October 2007 meeting, the Sector discussed the value and merits of required markings for software. This included the possible differences in some types of software-based devices and methods of marking requirements. After hearing several proposals, the Sector agreed to the following technical requirements applicable to the marking of software:

1. The NTEP CC Number must be continuously displayed or hard-marked;
2. The version must be software-generated and shall not be hard-marked;
3. The version is required for embedded (Type P) software;
4. Printing the required identification information can be an option;
5. Command or operator action can be considered as an option in lieu of a continuous display of the required information; and
6. Devices with Type P (embedded) software must display or hard-mark make, model, and S.N. to comply with G-S.1. Identification.

After the 2008 NCWM Annual Meeting, the Committee received the Software Sector's Proposal to amend G-S.1. Identification and/or G-S.1.1. Location of Marking Information for Not-Built-for-Purpose, Software-Based Devices in the Committee's 2008 Interim Report. The proposal listed "acceptable" and "not acceptable" methods for presenting:

NTEP CC number	Serial Number
Make	Software Version/Revision Number
Model	

At the 2009 NCWM Interim Meeting, SMA commented that it has consistently opposed having different requirements between embedded and downloadable/programmable software-based devices and added that it continues to support the intent of the proposal and will continue to participate in the Software Sector discussions to develop alternate proposals for the marking of software-based devices. Several Weights and Measures officials expressed concerns that the proposed language does not specify how the identification information is to be retrieved if it is not continuously displayed, noting this could result in several ways to access the information (e.g., passwords, display checks, dropdown menus). SMA added that the identification location information on the NTEP CC will become outdated anytime a manufacturer changes the way the information can be retrieved. SMA suggested that a limited number of methods to access the identification information be developed and specified as the only acceptable methods to retrieve identification information. This would make it easier for the inspector to verify the required identification information.

WMD noted that in 1992, the NCWM adopted S&T Committee agenda Item 320-6, S.6.3. Marking Requirements; Capacity by Division and recommended that Tables S.6.3.a. and S.6.3.b. (Note 3) be interpreted to permit the required capacity and scale division markings to be presented as part of the scale display (e.g., displayed on a video terminal or in a liquid crystal display), rather than be physically marked on the device. WMD agrees with the interpretation and suggested that this interpretation could be expanded to other marking requirements (e.g., flow rates, capacity, interval, etc.) and codes on a case-by-case basis, and that specific language (based on the above interpretation) be added to the applicable sections in HB 44.

Software Sector Co-chairman Mr. Jim Pettinato, FMC Technologies, stated that the Software Sector recommended that this item remain Informational to allow conference members to further study the proposal in order to develop a consensus on the format for Table G-S.1. Identification in its 2009 meeting summary.

At its spring 2009 meeting, NEWMA received similar comments from SMA and the Software Sector and took no position on this item pending its member review of the Software Sector's report.

At the 2009 NCWM Annual Meeting, the Committee reviewed the recommendations and comments from the Software Sector, SMA, and others, which may be reviewed in greater detail in the 2009 NCWM Annual Report:

The Committee agreed that this item remain an Information item and that the regional Weights and Measures associations review the above information and provide the Committee with comments and recommendations.

At its fall 2009 meeting, the CWMA had lengthy discussions about providing the required identification information in a single uniform method. Some of the topics addressed were:

- A single operation or button is needed to view all software version information.
- Use a single function key to access or continuously display software version information.
- Electronic data for both Type U and Type P devices could be hard marked, continuously displayed or accessed by command (operator action).
- The data is useless if it is not easy to access in the field.
- Concern about the cost of requiring a single designated button to access software version information.

The CWMA recommended this remain Information item with changes to the Committee's recommendations in its 2009 Interim Report as shown in the 2009 S&T Committee Annual Report and summarized as follows:

1. In proposed paragraph G-S.1.1.(a), add "or accessed by a command (operator action)" **and** delete subparagraph G-S.1.1.(b) (3). to read as follows:

G-S.1.1. Location of Marking Information for Type U (Not-Built-For-Purpose), Software-Based Devices. – For Type U ~~not-built-for-purpose, software-based~~ devices manufactured prior to January 1, 201X, either:

(a) *The required information in G-S.1. Identification. (a), (b), (d), and (e) shall be permanently marked or continuously displayed on the device; **or accessed by a command (operator action);***

(b) *The CC Number shall be:*

(1) *permanently marked on the device; **or***

(2) *continuously displayed.*

2. Delete Note 8 in "Table G-S.1. Notes on Identification."
3. Amend "Table G-S.1. Identification . . ." by deleting the three references to "via menu display," "Print Option (8)," adding "by command (operator action)," and deleting the language at the bottom of the table.

During the open hearings at the fall 2009 WWMA Annual Technical Conference, Mr. Straub, speaking on behalf of SMA, indicated SMA continues to oppose this item, referring to comments made in conjunction with Item 310-2. He also noted that even if the designations of Type U and Type P were adopted, SMA would continue to oppose the proposed changes to G-S.1., noting that requirements should apply equally to the two different device types described. The WWMA also heard from Mr. Johnson, Gilbarco, who agreed with SMA's assessment. He also indicated that it would be desirable to have the option of using a menu to provide information, citing increasingly limited space in which to provide marking information, and noted it would be virtually impossible for their company to provide a full time display.

Based on the comments received and its position relative to corresponding definitions for the device types developed by the Software Sector, the WWMA recommended that this remain Information item until the Software Sector has

had an opportunity to review comments from the 2009 NCWM Annual Meeting and any comments made at subsequent regional Weights and Measures association meetings.

At its fall 2009 meeting, the SWMA agreed that the Software Sector should continue to work on the proposal until it arrives at some final language for amending paragraphs G-S.1. Identification and G-S.1.1. Location of Marking Information for Not-Built-For Purpose, Software-Based Devices. The Software Sector should work with manufacturers in its development of the requirement, and any table or other tools should provide further clarity on the intent of the marking requirements.

During its fall 2009 meeting, NEWMA stated that it supports the Committee's decision to keep this item Informational to have sufficient time to consider the most recent comments from the regional Weights and Measures associations and other interested parties.

At the 2010 NCWM Interim Meeting, the Committee received comments from Mr. Straub, speaking on behalf of the SMA, reiterating SMA's spring 2009 position opposing any requirements for software that are different between types of devices and recommending that this item be withdrawn from the Committee's agenda. Mr. Straub added that SMA comments are based on the proposed "Item Under Consideration" in the Interim Agenda and not the alternate proposal submitted by the software sector after its 2009 spring meeting. Mr. Lewis, Rice Lake Weighing, stated that metrologically significant software should have the same version number marking requirements in Type P (fixed hardware and software) devices or in Type U software (not built-for-purpose) devices. The Software Sector chairman responded that the only difference in the sector's proposed language is that software identification requires version numbers and not serial numbers. In addition to the comments regarding the "hard marked" terminology presented at the 2009 Annual Meeting, WMD noted that devices with only Type U software are not required to have serial numbers. However, WMD asks the Sector to clarify its position on marking devices with both Type U and Type P software. Are devices required to have a serial number if it uses both Type P and Type U software?

Mr. Truex, NTEP Administrator, asked the members of the NCWM to provide direction to the Software Sector and the Committee for what is needed during field verification of software-based devices in order to determine that the software used in weighing and measuring devices represents the devices that were certified during type evaluation. What does a field inspector need to know about the software version in vehicle scales, electronic indicators, electronic cash registers interfaced with weighing and/or measuring devices, controllers with metrological software, etc.

Ms. Julie Quinn, Minnesota, reported that the state has problems because its officials find software versions that appear to be older than the version listed on the CC. Ms. Quinn added that NTEP evaluates software in these devices to verify that the accuracy of the first indication of the final measurement and the security of metrological adjustments.

Mr. Bryce Wilke, GIPSA, stated that most of the livestock investigations and other regulatory issues most commonly involve software that has not been developed by the original device manufacturer. He noted that any language in HB 44 and NTEP Pub 14 will help GISPA.

Mr. Ross Andersen, New York, stated that there is still some confusion about where the scope of NTEP ends and Weights and Measures' jurisdiction ends. He cited an example on a vehicle scale where a typewriter is used to issue the printed ticket. Weights and Measures still has the authority to regulate the way that measurement is used to accurately or inaccurately represent the transaction. Weights and measures authority still exists when the measurement takes place in one jurisdiction and is recorded and subsequently invoiced through a software system in a different jurisdiction.

Ms. Judy Cardin, Wisconsin, stated that NTEP is required if the software can change the measurement result and NTEP should evaluate software up to the point that the first indication of the final weight is presented.

Mr. Steve Malone, Nebraska, added that every electronic weighing and measuring device evaluated by NTEP has software and that the software is needed to make the device work. The problem is that the field inspector has no way of determining if the software in the device is the same as the software evaluated by NTEP without having to

carry a hard copy of the CC with them. Nebraska and other states within the CWMA would like to see a simple and standardized method an inspector could use to obtain the relevant software identification and version information.

Mr. Truex thanked the members who commented and reminded them that the Software Sector is not proposing to reopen the “first final” discussion, but to develop recommendations to help field officials to verify that software in a weighing or measuring device represents the type of software covered by an NTEP CC. The Committee concurs with Mr. Truex’s comments. The Committee agreed to replace the agenda language in the “Item Under Consideration” with the Software Sector’s 2009 proposed language in the Committee’s Interim Report. The Committee appreciates the work of the Sector and asks that it review the discussions on this item from the reports from regional Weights and Measures associations, as well as comments in writing from interested parties and from the open hearing during the 2010 Interim Meeting.

The Committee agreed that the status of this item should remain as Informational and asks for additional input from the Software Sector after it has reviewed these and other comments received since its last meeting.

Additional background information on this item can be reviewed in the Committee’s 2008 and 2009 Final Reports.

In response to comments heard during the 2010 NCWM Interim Meeting, the Software Sector (at its March 2010 meeting) proposed changes to the language shown in the NCWM S&T Committee’s 2010 Interim Report Item 310-3. These revisions removed the differentiation between types of software (Type P and Type U) while still managing to achieve the Sector’s objective of simplifying the process of locating required marking information.

In summary, for S&T Item 310-3 the Sector recommended amending the 2010 item under consideration by removing the proposed words “**and manufactured after January 1, 201X**” from the first sentence in paragraph G-S.1. and added that the remainder of the proposal remains unchanged. The Sector agreed that the added words are not necessary since the current proposal to amend G-S.1. includes applicable nonretroactive dates for the amended subparagraphs.

The Software Sector also initiated discussion on two new concepts, which may eventually result in additional recommendations to amend G-S.1. It should be noted that these new ideas are in the developmental stage, and are included here by request of the Sector, since comments from the regions and other interested parties would be appreciated by the Software Sector members.

First, the Sector sees merit to requiring some “connection” between the software identifier (i.e., version/revision) and the software itself. The proposal was to add a new sub-subparagraph (3) to G-S.1.(d) to read as follows (with the expectation that examples of acceptable means of implementing such a link would be included in Pub 14).

“The version or revision identifier shall be directly and inseparably linked to the software itself. The version or revision identifier may consist of more than one part, but at least one part shall be dedicated to the metrologically significant software.”

Second, it seems that at each meeting of the Sector, state weights and measures officials reiterate the problems they have in the field locating the basic information required when the CC number is marked via the rather general current HB 44 requirement of ‘accessible through an easily recognizable menu, and if necessary a sub-menu [G-S.1.1. (b)(3)]. States have indicated that this is too vague and field inspectors often cannot find the certificate number on unfamiliar devices.

The sector would like feedback on the proposal to specify a limited number of menu items/icons for accessing the CC number (it is not hard-marked or continuously displayed) in subparagraph (c) as follows:

(b) *The CC Number shall be:*

(3) *accessible through one or, at most, two levels of access.*

(i) *For menu-based systems, “Metrology”, “System Identification”, or “Help”.*

(ii) *For systems using icons, a metrology symbol (“M” or “SI”), or a help symbol (“?”, “I,” or an “i” within a magnifying glass).*

Note that this is not suggested to be the final list of valid options for locating the point of access for the CC number; the Software Sector would like to have feedback specifically on other acceptable menu text/icon images that identify how to access the CC number on software-based systems. The Software Sector agreed that a reasonable list of acceptable options is not as much of an issue as the fact that the list is finite. The sector realizes this may affect manufacturers so feedback from associate members and representative groups is also appreciated.

At its spring 2010 meeting, NEWMA recommended leaving this item informational to allow review of the software Sector’s newly proposed language from its March 2010 meeting.

During the 2010 Annual Meeting, the SMA stated that the proposal from the Software Sector addresses one of the SMA’s concerns dealing with the use of the term “not built for purpose;” however, it still has concerns with the requirement in G-S.1. stating that the software version or revision identifier must be clearly and permanently marked. The SMA recommends that the Software Sector and the S&T Committee review and correct what appears to be conflicting requirements as stated in G-S.1. and G-S.1.1. dealing with the marking requirement.

The Committee also received a summary of the 2010 meeting of the NTETC laboratories where some of the NTEP evaluators were concerned that the revised language could be interpreted such that no markings are required on a device. These evaluators expressed concern that an inspector would have to guess which of the eight methods recommended in the Software Sector Summary is to be used to find the CC number and questioned whether this would mean that a weighing or measuring device might not be marked with any identifier markings including the manufacturer.

The Committee amended the item under consideration based on the recommendations of the Software Sector at its March 2010 meeting. The Committee agreed to clarify and document the SMA concerns with the requirements in G-S.1. where it states that “all equipment . . . shall be permanently marked . . .” and G-S.1.1. that allows alternate methods, other than “permanently marked,” to identify software-based devices. Consequently, the Committee revised the first paragraph of G-S.1. to read as shown in the “Item Under Consideration” in the 2011 NCWM Interim Agenda.

At its 2010 fall Interim Meeting, the CWMA S&T Committee stated that it believes that this item should be moved to a Vote and suggested an editorial change on G.S.1.1. (b) (3), to read “*no more than two levels of access*” instead of “*one or, at most, two levels of access.*”

During the fall 2010 WWMA Annual Technical Conference, Mr. Cook, NIST Technical Advisor to the WS, provided an update to the Committee. Mr. Cook also discussed the conflicting language between G-S.1. and G-S.1.1. identified by the SMA and the NCWM S&T Committee’s solution to eliminate the conflict. The WS reviewed the list of acceptable abbreviations and icons as requested by the Software Sector and agreed that the abbreviation “SI” should not be included in the list since “SI” is also the abbreviation to the International System of Measurement.

The WS also noted that the icon “M” with the green fill  should not be used since it is used by the European Union as a metrology mark for all devices, not just for metrological software identification.

Mr. Flocken, speaking on behalf of the SMA, restated its April 2010 position based on the conflicting language in paragraphs G-S.1. and G-S.1.1. He added that the revised language for G-S.1. in the S&T Agenda should also be reviewed by the Software Sector. Mr. Johnson, Gilbarco, added that their current Retail Motor-Fuel Dispenser (RMFD) software cannot display alpha characters in or for software version identification which is problematic since the latest version of the proposal includes software identification for all software based devices. Mr. Johnson added that a possible solution would be to allow the software version to be reported on the NTEP CC.

The WWMA recommended the following amendment to G-S.1. (d)(2) that addresses Gilbarco’s comments on devices with limited character sets such as RMFD without alpha displays and/or annunciators to read as follows:

- (d) *the current software version or revision identifier for software-based devices;*
[Nonretroactive as of January 1, 2004]

(Added 2003)

(1) . . .

- (2) *Except for devices with limited character sets (e.g., primary indications without alpha characters or annunciators*) the version or revision identifier shall be prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required version or revision.*

(WMD Technical Advisor Note: After the WWMA meeting, WMD noted that it believes there is a need to address the exception by adding language to address the method for identifying the version or revision number for devices with limited character sets. For example: Add a new sentence at the end of (2) such as “For devices with limited character sets, the instructions to identify the version or revision identifier shall be listed on the NTEP CC.”)

[Nonretroactive as of January 1, 2007]

*[Nonretroactive as of January 1, 201X]

The WWMA believes that the above changes to the proposal sufficiently address all issues identified during the open hearings and that this should remain an Information item to allow the Software Sector an opportunity to comment on the revisions proposed by the NCWM and WWMA S&T Committees.

At its 2010 Annual Meeting open hearing, the SWMA heard from Mr. Johnson, Gilbarco, restating his concern about how this proposal would apply to some simpler devices that may have a limited display capability; while these devices may be able to display a software version number, they aren't able to display a designation that defines it as a "version number." Mr. Johnson also noted that the WWMA modified the proposed language to provide an exception for devices with limited character sets and encouraged the Committee to review this language. Mr. Straub, Fairbanks Scales, speaking on behalf of SMA stated that SMA, at its 2010 spring meeting, opposed this item. Mr. Straub also pointed out that there appears to be a conflict with regard to the required permanence of the marking, noting that G-S.1. refers to "permanently marked," whereas G-S.2. makes reference to "continuously displayed" markings.

The SWMA S&T Committee considered whether or not the proposal is ready to be adopted. Based on the variety of comments heard, comments opposing the item, and the alternatives presented, the Committee did not feel it could make a recommendation at this time. The Committee felt that the Software Sector should be given the opportunity to review the input and comments made on this issue since the last meeting of the Sector. Consequently, the Committee felt that the item should remain as an Information item on the NCWM S&T Committee's agenda.

At its fall 2011 Interim Meeting, NEWMA states that the WWMA proposed revision to the "item under consideration" and questions raised have merit. NEWMA recommends this remain an Information item to give the Weighing Sector and the NCWM S&T Committee time to evaluate the new language.

310-3 G-A.6. Nonretroactive Requirements (Remanufactured Equipment)

Source: WWMA and SWMA 2010 Carryover Item 310-4.

Purpose: Clarify the intent of the 2001 NCWM position on the application of nonretroactive requirements to devices which have been determined to have been "remanufactured."

Item Under Consideration: Amend HB 44 General Code paragraph G-A.6. Nonretroactive Requirements by amending subparagraphs (a) and (b) as follows:

G-A.6. Nonretroactive Requirements. – "Nonretroactive" requirements are enforceable after the effective date for:

- (a) devices manufactured and remanufactured within a state after the effective date;

- (b) both new, ~~and~~ used, and remanufactured devices brought into a state after the effective date; and
- (c) devices used in noncommercial applications which are placed into commercial use after the effective date.

Nonretroactive requirements are not enforceable with respect to devices that are in commercial service in the state as of the effective date or to new equipment in the stock of a manufacturer or a dealer in the state as of the effective date.

[Nonretroactive requirements are printed in italic type.]

(Amended 1989 and 201X)

Background/Discussion: WMD received an inquiry from a state Weights and Measures Director regarding whether or not a nonretroactive paragraph in the LMD Code of HB 44 would apply to a remanufactured device. In researching this inquiry, WMD discovered an unintended gap in the General Code requirements relative to remanufactured equipment.

- Paragraph G-S.1.2. Remanufactured Devices and Remanufactured Main Elements is a non-retroactive requirement for marking a device with the remanufacturer's information and was enforceable on a nonretroactive basis as of January 1, 2002. WMD believes that this paragraph was intended to apply to remanufactured devices and remanufactured main elements that have been placed into commercial service as of the effective date of the requirement, which was January 1, 2002.
- Paragraph G-A.6. Nonretroactive Requirements. (which provides the various conditions in which nonretroactive requirements apply) does not include references to "remanufactured devices" or "remanufactured main elements." Subparagraph (a) (of G-A.6.) references and applies to "manufactured" devices within a state. Appendix D of HB 44 defines a "manufactured" device as any commercial weighing or measuring device shipped as new from the original equipment manufacturer (OEM). Subparagraph (b) could be applied to remanufactured devices that are brought into a state, but could not be applied to those devices installed by a remanufacturer or distributor operating within the state. Subparagraph (c) applies to devices placed into commercial service that had previously been used in noncommercial applications.

Research into past NCWM Conference Reports indicates that a proposal to change the HB 44 definition of "manufactured device" was adopted by the NCWM in 2001. The definition was amended and new definitions for "remanufactured" and "repaired" devices were added; these changes were made based on the recommendations of the NCWM Remanufactured Devices Task Force to provide a recommendation to distinguish remanufactured devices from repaired devices and, thus, give the field official tools to determine what requirements apply to both types of devices. The previous definition, shown below and identified as the "2001 HB 44 definition," included text that WMD believes was intended to include remanufactured devices. The new definition deleted the text "new device or any other device" to the extent that the definition from 2002 forward only applies to devices shipped as new from the OEM.

2001 HB 44 Definition

manufactured device. – Any new device or any other device that has been removed from service and substantially altered or rebuilt.

2002 HB 44 Definition

manufactured device. – Any commercial weighing or measuring device shipped as new from the original equipment manufacturer.

It should be noted that the definitions for repaired and remanufactured devices were also adopted to provide guidance to officials to determine if a device has been remanufactured to "be made to operate like a new device of

the same type” or repaired to bring it “back into proper operating condition” (see the “Report of the 86th NCWM” Annual Report S&T Item 310-1, page S&T - 5).

If paragraph G-A.6. were interpreted as being silent with respect to remanufactured devices and remanufactured main elements, G-S.1.2., in WMD’s opinion, could not be applied. This was clearly not the intent since, as indicated by its title, it was designed to apply to “remanufactured” equipment.

Because remanufactured devices compete with newly manufactured devices, WMD believes the intent of G-A.6. Nonretroactive Requirements is intended to include such equipment in the scope of the paragraph. That is, remanufactured devices and remanufactured main elements should have to comply with the most current nonretroactive requirements in effect as of the date the devices or elements are remanufactured.

A change is needed to G-A.6. to clarify the application of G-S.1.2. and other nonretroactive requirements, which WMD believes should apply to remanufactured devices and remanufactured main elements.

An additional reason to adopt the proposed language is that the proposed modification to G-A.6. would clearly support their actions in the event that Weights and Measures officials are challenged regarding the application of G-S.1.2. or other nonretroactive paragraphs.

It should be noted that device owners and remanufacturers may experience difficulty in complying with applicable nonretroactive requirements in instances where states have not previously applied them to remanufactured equipment. The extent to which this has occurred may become more evident as this issue is discussed within the regional Weights and Measures and industry associations and alternatives to alleviate this burden on existing equipment could be considered.

While developing this proposal, WMD contacted two RMFDs OEMs and representatives from those companies both indicated that remanufactured RMFD’s should comply with the most recent HB 44 nonretroactive requirements in effect as of the date they are remanufactured.

WMD also contacted the chairman of the Remanufactured Device Task Force that was formed by the NCWM BOD in 1999. The chairman indicated that to the best of his recollection, there was no conscious discussion from the task force of how nonretroactive requirements were to apply to remanufactured equipment. He believes that different states may be enforcing nonretroactive requirements differently with respect to remanufactured equipment.

The following is a brief history of paragraph *G-S.1.2. Remanufactured Devices and Remanufactured Main Elements*:

- 1997 – A proposal to add a new paragraph addressing the required marking on RMFD’s that had been resold for placement into service first appeared as an Informational item on the NCWM Specifications and Tolerances Committee agenda.
- 1999 – The NCWM appoints a task force to examine the required marking issues of remanufactured equipment. The primary responsibility of the task force was to develop a marking requirement proposal for the NCWM consideration.
- 2001 – The task force proposed to add several new definitions and a General Code requirement (G-S.1.2.) to HB 44. The task force also proposed changing the existing HB 44 definition of “manufactured device.” Of importance, the proposal removed language from the definition that linked devices that had been substantially altered or rebuilt to G-A.6.
- 2002 – The marking requirement for remanufactured devices and remanufactured main elements first appeared in HB 44 along with new definitions for “remanufactured devices (and elements)” and “repaired devices (and elements).”

The proposed change in the “Item Under Consideration” will clarify how nonretroactive paragraphs apply to remanufactured equipment.

WMD notes that the issue of applying paragraph G-A.6. to remanufactured equipment is separate from that of determining when a device or element has been “remanufactured.” Definitions found in Appendix D of HB 44 along with guidance developed by the NCWM Remanufactured Equipment Task Force can be used to assist jurisdictions in determining when a device or main element has been “remanufactured.” The proposed change does not suggest changing these tools or their application. The proposed change is only to clarify the application of G-A.6. to devices that have been determined to have been “remanufactured.”

Even if the proposed direction of solving this problem is not supported as written, WMD believes that some alternate language needs to be added to G-A.6. to clarify its application to remanufactured equipment.

At its fall 2009 meeting, the CWMA suggested that this item be given Developmental status. The CWMA requested that a number of questions regarding how devices are categorized as “remanufactured” be addressed prior to considering this as an Informational item.

During their fall 2009 meetings, the WWMA and SWMA agreed that nonretroactive requirements are applicable to remanufactured equipment that is remanufactured after the effective date. The WWMA believed these devices are competing with new and used devices and should, therefore, be subject to the same requirements. The WWMA and SWMA recommended the proposal be included as a Voting item with some modifications on the Committee’s 2010 Agenda.

At its fall 2009 meeting, NEWMA stated it does not support this proposal because it is not clear what problem the proposal is trying to solve and suggested that the proposal is redundant, since a remanufactured device is considered a new device with its own CC and, therefore, already has to meet code requirements.

At the 2010 NCWM Interim Meeting, the Committee received comments from Mr. Straub, Fairbanks Scales, speaking on behalf of the SMA, who supported the item as proposed in the WWMA recommendation. Some other industry members, including at least one device remanufacturer testified that they have not had sufficient time to review and analyze the impact of the proposal which is intended to clarify existing language. Others stated remanufactured devices need to be treated as new and that they compete with new devices manufactured after the nonretroactive date of new and amended requirements in effect after the device was remanufactured. Mr. Andersen, New York, stated that this proposal should not be part of “Application” paragraphs.

The Committee agreed that the proposed amendment is supported by the intent of the NCWM Remanufactured Devices Task Force when it recommended making a distinction between repaired and remanufactured devices since such a distinction may impact applicable tolerances, NTEP status, and fair competition when a remanufactured device is represented as “good as new.” The Committee also believes that many of the questions raised by the CWMA are answered in the 2000 Report of the NCWM Remanufactured Device Task Force in Appendix A of the 86th NCWM Annual Report page S&T - 58 through S&T - 69. The Committee also noted that not all remanufactured devices are required to have a new CC and are still traceable to the original CC as noted in the “List of Examples” in the task force report in pages S&T - 64 through S&T - 66.

The Committee recommended that this item, as amended by the WWMA, move forward as a Voting item.

At its 2010 spring Annual Meeting, NEWMA recommended that this item remain an Information item until questions raised during the discussion at its open hearing have been addressed.

At its 2010 spring Annual Meeting, the CWMA recommended that the nonretroactive requirements should be applicable to all new devices. That is, the requirement would apply to remanufactured devices defined in HB 44 as being made to operate like a new device of the same type (i.e., work done to a device or element to the extent that it is required to be marked as “remanufactured” in the Remanufactured Task Force table of scenarios.). The CWMA further recommends that this item be made an Information item to address some of the concerns raised by manufacturers and to review the Task Force guidelines. The CWMA also recommended that the list be posted on the NCWM and/or WMD websites according to the recommendation in the 2002 NCWM Annual Report.

At the 2010 NCWM Annual Meeting, the Committee received several comments from remanufacturers requesting the item be made an Information item to give the device remanufacturers additional time to evaluate the impact of the proposed amendment to G-A.6.

During the open hearing, the Committee also received a letter from Mr. Thomas McGee, PMP Corporation in Appendix C, stating that he disagrees with WMD that the proposed changes to G-A.6. is a clarification of the intent of the Remanufactured Devices Task Force. As it currently reads in the 2010 version of HB 44, G-A.6 Nonretroactive Requirements applies to new devices based on the "Original Manufacturing Date" as compared to the effective date of a requirement. Therefore, a device originally manufactured in January 2002 and remanufactured January 2007 would need to meet all nonretroactive requirements added to the handbook up to and including January 2007. In his letter, Mr. McGee provided an example of a RMFD removed from an installation and remanufactured. In this example, the dispenser was disassembled and checked for wear, and a new mechanical computer and new outer skins were installed. The dispenser was checked for accuracy and everything checked out per HB 44. Because this dispenser was out of production prior to the adding of the nonretroactive marking requirement specifying that the CC number be clearly marked on the dispenser, it could be rejected by a state and not allowed to be installed.

Mr. McGee added that, as stated in the discussion of the item, NIST makes a direct comparison between a new device and a remanufactured device indicating they directly compete with each other. This is true as far as competing in the same market as a whole, but not if you factor in technology, features, warranty, etc. Sometime in the 1990s the Remanufactured Task Force recognized that Remanufacturing has been going on for a long time and is just part of the business. The remanufactured devices do not directly compete with new devices, but they do fill a void. A smaller low volume operation can buy remanufactured devices at a reduced price, which keeps them competitive with the large volume operations. It provides a means to extend the life of equipment that maybe has gone out of production but is still very accurate and reliable. Mr. Mc Gee recommended that this be moved back to an Information item or removed from the agenda. If made an Information item it would give all of those companies that could be impacted by the change to review and comment on this issue. He added that this is not just a clarification. It is clearly a change in the philosophy of applying Nonretroactive Requirements. A complete copy of Mr. McGee's letter (less extracts of HB 44 and above background information) can be viewed in Appendix A of this Report.

Mr. Don Graff, Graffco Inc., submitted a list of remanufacturers of LMD in Appendix C that may be impacted by the enforcement of nonretroactive requirements on remanufactured devices and requested that this item be given Information status. A complete copy of Mr. Graff's letter can be viewed in Appendix A of this Report.

The Committee also received a letter of support for this item from Mr. R. Michael Carlson, President, Dresser Wayne North America (see Appendix C). Mr. Carlson expressed his company's concerns about a growing trend to extend the lifecycle by refurbishing or "remanufacturing" the equipment after its removal from the original site and then placing it back into the stream of commerce without first bringing it into compliance with current NTEP standards. This failure to meet applicable NTEP certification standards increases the chances of errors, misuse, and fraud and puts consumers as well as station owners at risk. The current practice of extending the usable life of fuel dispensers without a system of checks and balances to help ensure that, at the time of sale, such used and remanufactured equipment meets current NTEP standards results in inconsistency in the marketplace and an unacceptable risk of error.

Mr. Carlson added that the consistency and accuracy of fuel-dispensing equipment is an issue of critical and growing importance. For decades the industry has been able to safely and reliably operate within a fueling and payment infrastructure that remained relatively stable. However, the last few years have brought significant changes to the marketplace, including the following:

- Payment security including:
 - Increasing threats of fraud through sophisticated fuel and identity-theft schemes;
 - Credit card industry mandates for increasingly rigorous payment-security standards; and
 - Dispenser manufacturers have enhanced fuel-meter technology and associated electronics to deter tampering with measurement and calibration.

- Fuel evolution including:
 - Ultra-low-sulfur diesel (ULSD) and diesel exhaust fluid (DEF) have taxed the capabilities of dispensers' hydraulic systems; and
 - Higher levels of ethanol in today's fuels require specially fabricated seals and components.
- Communications interface (and security) including:
 - Download of dispenser software from remote sources; and
 - The potential for automatic meter-calibration.

Thus, Dresser Wayne supports maintaining item 301-4 G-A.6. as a Voting item at the National Conference on Weights and Measures in July 2010 and noted that it is in the best interest of the general public, station owners and the fuel-dispensing industry in general. A complete copy of the letter can be viewed in Appendix A of this Report.

Mr. Andersen, New York, stated that one of the primary issues that led to the marking requirements was original manufacturers' concern over warranty and liability concerns when devices were remanufactured with unauthorized parts. Mr. Lewis, Rice Lake Weighing, expressed concern about a remanufacturer's ability to remanufacture a device without the original manufacturer's blueprints and parts lists. Additionally, Mr. Lewis stated that VCAP should also be applicable to remanufacturers that work on devices subject to testing for influence factors.

The SMA stated its support for this item during the open hearings. WMD reiterated that the current issue was proposed because paragraph G-A.6. does not specifically reference "remanufactured" devices and elements and that WMD has received questions on how or if nonretroactive requirements are to be applied to "remanufactured" devices and elements. WMD believes that it was the intent of the 2001 and 2002 Committees that remanufactured devices would be subject to nonretroactive requirements according to the definition for "remanufactured devices" in Appendix D. Other OEMs have also stated that they remanufacture their own devices and, typically, remanufacture them to the current applicable nonretroactive devices.

WMD also provided the Committee with the following "real life" examples outlining when a device is considered as "repaired" or "remanufactured."

Weighing Devices

Example 1: A scale service agency replaces all of the load cells of a vehicle scale's weighing/load-receiving element with load cells of a different manufacture that are metrological equivalent cells and of the same basic type. The replacement cells have been issued an NTEP CC and are replaced without any modification to the load cell mounting assembly.

The associated guideline adopted by the NCWM in 2002 is "Guideline Item" 9-W, Section I Examples of Repaired Devices/Repaired Elements (no metrological change).

According to the guideline, this is an example of a repaired device. The weighing/load-receiving element would still be traceable to the original NTEP CC and would not be required to comply with the most recent nonretroactive requirements.

Example 2: A scale service agency completely rebuilds a used retail-computing scale that they acquired from a grocery store that had had it in service for over 15 years. The scale is completely disassembled, parts inspected for wear, and all worn parts replaced with remanufactured parts that are not OEM, but are the same design. The load cell, found to still be functioning satisfactorily, is not replaced. The scale is then reassembled and sold to a delicatessen located within the same state as the service agency.

The associated guideline adopted by the NCWM in 2002 is "Guideline Item" 3-W, Section II Examples of Remanufactured Devices/Remanufactured Elements (no metrological change).

According to the guideline, this is an example of a "remanufactured" device. The scale would still be traceable to the original NTEP CC, but would need to be marked in accordance with paragraph

G-S.1.2. Remanufactured Devices and Remanufactured Main Elements and also would be required to comply with the most recent HB 44 nonretroactive requirements in effect as of the date the scale is installed in its new location. For example, if the remanufactured scale were installed July 1, 2010, it would need to comply with paragraph G-S.1., bullet (e) which requires an NTEP Certificate of Conformance (CC) or CC Addendum Number for devices that have a CC be permanently marked. This particular requirement is nonretroactive as of January 1, 2007.

Measuring Devices

Example 1: A used equipment dealer replaces a meter that cannot be brought into proper calibration with a used meter of the same model taken from a used dispenser. This work is performed at the used equipment dealer's shop. The replacement meter is recalibrated after installation and then placed back into service.

The associated guideline adopted by the NCWM in 2002 is "Guideline Item" 8-M, Section I Examples of Repaired Devices/Repaired Elements (no metrological change).

According to the guideline, this is an example of a "repaired" device. The device is still traceable to the original NTEP CC and would not be required to comply with the most recent nonretroactive requirements in effect as of the time this work was completed.

Example 2: A remanufacturer of dispensers completely disassembles a RMFD and replaces the meter with the same model meter remanufactured by another firm. They then fix and replace all other parts as needed, reassemble the dispenser, and offer it for sale as a "remanufactured" dispenser.

The associated guideline adopted by the NCWM in 2002 is "Guideline Item" 6-M, Section II – Examples of Remanufactured Devices/Remanufactured Elements (no metrological change).

According to the guideline, this is an example of a "remanufactured" device. It would need to be marked in accordance with paragraph G-S.1.2. Remanufactured Devices and Remanufactured Main Elements and also would be required to comply with the most recent HB 44 nonretroactive requirements in effect as of the date the dispenser is installed into commercial service. For example, if a 15 year old dispenser were remanufactured and returned to service on July 1, 2010, it would need to comply with Liquid-Measuring Devices Code, paragraph S.4.4.2. Location of Marking Information; Retail Motor-Fuel Dispensers, which is nonretroactive as of January 1, 2003.

The Committee considered the following points:

- If it was not the intent of the NCWM in adopting the definitions and marking requirements for "remanufactured" devices and elements to subject remanufactured devices to Nonretroactive requirements, then how should G-S.1.2. be applied since the "remanufactured" marking requirement in G-S.1.2. was adopted as a nonretroactive requirement?
- The terms "manufactured" and "remanufactured" have distinct definitions in that manufactured devices are shipped as new and remanufactured devices are made to operate as new as defined in HB 44 Appendix D.
- Paragraph G-A.6. is currently silent with respect to remanufactured devices and elements.
- There is a lot of misunderstanding of the original findings and recommendations of the original task force.
- The report of the Remanufactured Task Force and table of scenarios is not readily available outside of the 2001 NCWM Final Report.

After considering these points and the comments received on this issue, the Committee agreed to designate this as Information item to allow interested parties to review the report of the Remanufactured Task Force and associated table of scenarios. The Committee also requested that the NIST Technical Advisor contact the NTEP Administrator to discuss the potential impact of VCAP on remanufacturers with regard to how these guidelines would be integrated into the VCAP system.

At its fall 2010 Interim Meeting, the CWMA received comments during its open hearing to adopt the proposal as written and move it forward for a Vote. Members of the CWMA believe that remanufactured devices also need to

be traceable to an NTEP CC. The CWMA also received comments concerning unfair competition between original manufacturers and remanufacturers due to the use of non-OEM replacement parts. The CWMA S&T Committee recommends that this item be moved as a Voting item for the reasons stated above. All new and remanufactured device types to be used in trade or commerce must be traceable to an NTEP CC.

During the fall 2010 WWMA Annual Technical Conference, Mr. Cook, NIST Technical Advisor, provided the WWMA a handout “Summary of 2010 HB 44 General, Scales, and Liquid-Measuring Devices Codes Nonretroactive Requirements” to help the WWMA assess the impact these requirements might have on remanufactured devices and elements in Appendix B. Mr. Cook added that he will discuss with Mr. Truex, NTEP, Administrator, how the VCAP requirements will impact this issue if VCAP addresses “production meets type” policies and guidelines for devices that have been remanufactured by parties other than the OEM. Mr. Flocken, speaking on behalf of the SMA, supported this proposal. Mr. Johnson, Gilbarco, also supported this proposal.

The WWMA S&T Committee considered the effect of applying nonretroactive requirements to devices which have been determined to have been “remanufactured” expressing concern that this General Code revision may have an unanticipated impact on certain devices. The WWMA S&T Committee reviewed the list provided by Mr. Cook and found that some requirements seemed to be metrologically insignificant, with minimal benefit to users and/or consumers. The WWMA S&T Committee is uncertain if VCAP policies and guidelines should be considered when devices are required to be retested for compliance with influence factor requirements. The WWMA requested that the NIST Technical Advisor contact Mr. Truex, NTEP Administrator, and ask if VCAP policies and guidelines are also applicable to NTEP devices and elements subject to influence factor requirements that are remanufactured (and still traceable to the original CC).

The WWMA agrees that while the “Examples of Repaired Devices/Repaired Elements” in Appendix B were sufficiently developed, they need to be readily available to remanufacturers and field officials.

The WWMA agrees that the item should continue as an Information item, allowing other regions and industry to provide input.

At its fall 2010 Annual Meeting, the SWMA S&T Committee considered the effect of applying nonretroactive requirements to devices which have been determined to have been “remanufactured.” Based on some of the comments heard during its open hearings, the Committee was not clear how the proposed changes might impact some remanufactured equipment. The Committee reviewed a summary of nonretroactive requirements prepared by Mr. Cook, NIST WMD. The Committee agreed with the WWMA’s assessment that some requirements seemed to be metrologically insignificant, with minimal benefit to users and/or consumers. The SWMA S&T Committee agreed with the WWMA that while the examples of repaired and remanufactured devices and elements were sufficiently developed, they need to be readily available to remanufacturers and field officials. For example, referenced in HB 44 Appendix D Definitions, and published in NIST Handbook 112, and on NCWM and WMD websites.

The SWMA agreed that the item should remain an Information item to allow for input from stakeholders on the impact of the proposal. The Committee noted that, to assist field officials and industry in correctly applying the HB 44 requirements, modification should be made to G-A.6. to clearly define whether nonretroactive requirements do apply or do not apply to remanufactured equipment.

At its 2010 fall Interim Meeting, NEWMA heard from Mr. McGee, PMP Corporation. He stated his opposition to this item. He believes the current language in the HB 44 already covers remanufactured devices by virtue of the use of the term “used” in General Code paragraph G-A.6. (b) Nonretroactive Requirements. He stated that any devices that are remanufactured, repaired, reconditioned, refurbished, or rebuilt are used equipment. Therefore, they are required to comply with nonretroactive requirements if brought into a state. Hence, there is no pressing need to change the wording to include “and remanufactured” in G-A.6.(b).

Discussion from the group restated the position that NEWMA does not see a need for this item when devices are serviced to such an extent that they are required to be marked as “Remanufactured” and must comply with nonretroactive requirements. NEWMA continues to question the purpose of this item if remanufactured devices are already considered as new devices in HB 44.

After receiving the report from NEWMA, Mr. Cook, NIST Technical Advisor, contacted Mr. McGee to clarify his reasons for opposing this item. He responded by questioning, as a practical manner, whether a weights and measures official would reject a specific model delicatessen scale if a grocery store chain moved it from one of their stores in one state to one of their stores in another state just because the imported scale did not have a CC number marked on the scale label, especially if it was the exact same model as the scales already in the store. Similarly, he questioned whether a weights and measures official was going to reject a retail motor fuel device brought into a state from another state to replace one hit and damaged beyond repair by a motorist because it did not have the CC number marked on the dispenser label, or the name plate or the label was not placed at the required proper height. This is especially an issue in stations with dispensers manufactured by firms that are no longer in existence.

320 SCALES

320-1 T.N.4.5.1. Time Dependence: Class II, III, and IIII Non-automatic Weighing Instruments

Source: 2010 NTETC Weighing Sector

Purpose: To reduce the inconsistency between full load time dependence (creep) and return to zero return requirements in T.N.4.3. Zero Return: Non-automatic Weighing Instruments (creep recovery).

Item Under Consideration:

T.N.4.5.1. Time Dependence: Class II, III, and IIII Non-automatic Weighing Instruments. – A non-automatic weighing instrument of Classes II, III, and IIII shall meet the following requirements at constant test conditions. During type evaluation, this test shall be conducted at $20\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ ($68\text{ }^{\circ}\text{F} \pm 4\text{ }^{\circ}\text{F}$):

- (a) When any load is kept on an instrument, the difference between the indication obtained immediately after placing the load and the indication observed during the following 30 minutes shall not exceed **0.5 e**.

(iii) 0.5 e for Class II and IIII devices,

(iv) 0.5 e for Class III devices with 4000 or fewer divisions,

(v) 0.83 e for Class III devices with more than 4000 divisions.

However, the difference between the indication obtained at 15 minutes and the indication obtained at 30 minutes shall not exceed 0.2 e.

For mutli-interval or multiple range instruments, when any load is kept on an instrument, the difference between the indication obtained immediately after placing the load and the indication observed during the following 30 minutes shall not exceed 0.83 e_i (where e_i is the interval of the weighing segment or range).

- (b) If the conditions in (a) are not met, the difference between the indication obtained immediately after placing the load on the instrument and the indication observed during the following 4 hours shall not exceed the absolute value of the maximum permissible error at the load applied.

(Added 2005) (Amended 2006 **and 2010**)

Background/Discussion: During the 2010 Annual Meeting, the NCWM voted to amend the language in T.N.4.5.3. Zero Load Return: Non-Automatic Weighing Instruments. Hobart Corporation reported that the changes to scale tolerances for time dependence in HB 44 adopted in 2005 are still not consistent with the intent to harmonize load cell and scale performance requirements. In 2009 the WS addressed creep recovery on return to zero but there is still an extremely tight 0.5e requirement (Scales Code paragraph T.N.4.5.1.(a)) for the change in indications in 30 minutes. This requirement makes the recent changes to the scale zero return (creep recovery)

specification of minimal value since the amount of creep at capacity is related to a load cells' ability to return to zero. The WS agreed with the intent of the proposal submitted by Hobart Corporation and agreed to submit the above proposal to amend HB 44 Scales Code paragraph T.N.4.5.1.(a) to the NCWM S&T Committee and regional weights and measures associations.

At its fall 2010 CWMA Interim Meeting, the CWMA S&T Committee recommended this item be further developed by the WS since there was no one to speak on behalf of the proposal.

At its 2010 fall WWMA Annual Technical Conference, Mr. Flocken, Mettler Toledo and Mr. Straub, Fairbanks Scales stated their support for this item. There were no comments in opposition. The WWMA agreed that this item is sufficiently developed for the NCWM Agenda as a Voting item.

During its open hearings at the fall 2010 SWMA Annual Meeting, the SWMA S&T Committee heard support for this item from Mr. Straub, Fairbanks Scales. Mr. Straub noted that the industry was aware of the need for these changes when other, related changes were adopted for paragraph T.N.4.5.1. in July 2010. However, rather than attempting to address these changes all at that time, industry felt additional time should be given to allow industry and weights and measures officials to study additional changes to the paragraph. The SWMA heard no comments in opposition to the proposal and felt that the proposed change is reasonable. Additionally, the SWMA recognized that the issue has received technical review from the members of the WS. Thus, the SWMA recommends that the item be included on the NCWM S&T Committee's agenda as a Voting item.

At its fall 2010 NEWMA Interim Meeting, the NEWMA S&T Committee recommended this item remain an Information item since there was no one to speak on behalf of the proposal.

320-2 T.N.4.7. Creep Recovery for Load Cells

Source: 2010 NTETC Weighing Sector

Purpose: To eliminate the conflict in load cell creep recovery tolerances between Class III and III L load cells by increasing the creep recovery tolerance for Class III L load cells by the same factor (5/3) as was used in 2009 when the creep recovery tolerances for Class III load cells were amended.

Item Under Consideration:

T.N.4.7. Creep Recovery for Load Cells During Type Evaluation. – The difference between the initial reading of the minimum load of the measuring range (D_{min}) and the reading after returning to minimum load subsequent to the maximum load (D_{max}) having been applied for 30 minutes shall not exceed:

- (a) 0.5 times the value of the load cell verification interval (0.5 v) for Class II and III load cells;
- (b) 0.5 times the value of the load cell verification interval (0.5 v) for Class III load cells with 4000 or fewer divisions;
- (c) 0.83 times the value of the load cell verification interval (0.83 v) for Class III load cells with more than 4000 divisions; or
- (d) ~~2.5~~ ~~1.5~~ times the value of the load cell verification interval (~~2.5~~ ~~1.5~~ v) for Class III L load cells.

(Added 2006) (Amended 2009 **and 201X**)

Background/Discussion: At the 2010 Annual Meeting of the WS, Avery Weigh-Tronix reported that HB 44 Creep Recovery tolerances for Class III load cells with $n > 4000$ divisions in Scales Code paragraph T.N.4.7., is now greater than creep recovery tolerances applicable to Class III L load cells. In terms of mV/V equivalency, a Class III/III L load cell can now pass Class III and fail Class III L creep recovery tolerances.

Prior to 2009, the tolerance for Class III load cells was 0.5v. This was increased by a factor of 5/3 to arrive at the 0.83 v tolerance in the current requirement. This recommendation proposes to increase the existing 1.5v tolerance

for Class III L load cells by the same 5/3 factor. Thus the new tolerance would be $1.5v \times 5/3$ or $2.5v$.

The following is an example of a 50 000 lb load cell marked with both III and III L accuracy classes that illustrates the problem.

Class III:	Class III L
$n_{\max} = 5000$	$n_{\max} = 10\ 000v$
$v_{\min} = 10\text{ lb}$	$v_{\min} = 5\text{ lb}$

The current Class III creep recovery tolerance is $0.83v$ ($0.83v \times 10\text{ lb}/v = 8.3\text{ lb}$)

The current Class III L creep recovery tolerance is $1.5v$ ($1.5v \times 5\text{ lb}/v = 7.5\text{ lb}$)

The proposed Class III L creep recovery tolerance is $1.5v \times 5/3 = 2.5v$ ($2.5v \times 5\text{ lb}/v = 12.5\text{ lb}$)

The NIST Technical Advisor to the WS provided the Sector with a summary of creep recovery test results from October 1, 2007, through August 12, 2010, for Class III L load cells from the NIST Force Group that shows that Class III L load cell creep recovery type evaluation compliance rate is 76 % using existing tolerances. The compliance rate for Class III load cells over the same time period is 69 % using the expanded tolerance adopted in 2009. Mr. Kevin Fruechte, Avery Weigh-Tronix, explained to the WS the need to amend the creep recovery tolerances for Class III L load cells based on the example provided by the NIST Technical Advisor. A WS member stated that using the 5/3 factor would reconcile the differences between U.S. Class III L creep recovery tolerances with comparable OIML R 60 Class C load cell tolerances. The WS agreed to submit the language to amend paragraph T.N.4.7. to the S&T Committee and regional weights and measures associations as shown in the item under consideration.

At its fall 2010 CWMA Interim Meeting, the CWMA S&T Committee recommended this item be further developed by the WS since there was no one to speak on behalf of the proposal.

At its 2010 WWMA Annual Technical Conference, Mr. Flocken, Mettler, Mettler Toledo, and Mr. Straub, Fairbanks Scales, stated their support for this item. There were no comments in opposition. The WWMA agreed that this item is sufficiently developed for the NCWM Agenda as a Voting item.

During its open hearings at the 2010 SWMA Annual Meeting, the SWMA S&T Committee heard no comments in opposition to the proposal and felt that the proposed change is reasonable. The Committee also noted that there was industry support for the proposal at the WWMA based on the WWMA addendum sheets.

At its fall 2010 NEWMA Interim Meeting, the NEWMA S&T Committee recommended this item remain an Information item since there was no one to speak on behalf of the proposal.

321 BELT-CONVEYOR SCALE (BCS) SYSTEMS

321-1 N.3.1.3. Check for Consistency of the Conveyor Belt Along Its Entire Length

Source: 2010 Carryover Item 321-1. This item originated from the 2008 WWMA Meeting. (This item first appeared on the 2008 Committee’s Developing Items Section of its agenda as Item 360-2 Part 3 Item 2.)

At the 2010 NCWM Annual Conference, this item was changed to a Developmental item at the request of the submitter since the NIST/OIML U.S. National Working Group (USNWG) believed that the item needed additional development and was intended to be moved to item 360-2 Developing Items Part 2.21. Belt-Conveyor Scale Systems – Item 1. After the NCWM Annual Meeting, the Committee received a request from the USNWG stating that the language in the Committee’s 2010 Interim Report was further developed and recommended that the revised “Item Under Consideration” is ready to be added to the Committee’s 2011 Interim Agenda.

The NIST Technical Advisors added that they believe that the request satisfies the criteria for inclusion in the Committee’s agenda according to HB 44 Introduction Sections H and I, and that the WWMA, at its fall 2011 Annual Technical Conference, voted to add this item to the NCWM Committee’s agenda pending approval of the

revised language by the entire USNWG. The final report of the 2010 WWMA and SWMA may be reviewed at the end of the background/discussion section in this item.

Purpose: The BCS WG agrees that the existing language in N.3.1.3. results in an excessive allowance for the variation in the totalizers for a belt with larger minimum division sizes. Conversely, the three division requirement can impose an excessively narrow restriction for BCS with smaller minimum divisions. The proposed amendment corrects the issue and makes the allowable variation independent of division size.

Item Under Consideration: Amend NIST HB 44, Section 2.21. Belt-Conveyor Scales (BCS) Systems Code, paragraph N.3.1.3. as follows:

N.3.1.3. Check for Consistency of the Conveyor Belt Along Its Entire Length. – During a zero-load test with all operational low-flow lockout disabled, the total change indicated in the totalizer during any complete revolution of the belt shall not exceed the absolute value of 0.12 % of the minimum totalized load. After a zero-load test with flow rate filtering disabled, the totalizer shall not change more than plus or minus ($\pm 3 d$) 3.0 scale divisions from its initial indication during one complete belt revolution.

Note: The end value of the zero-load test must meet the ± 0.06 % requirement referenced in the “Test for Zero Stability.”

(Added 2002) (Amended 2004 **and 201X**)

Background/Discussion: At its fall 2007 Annual Technical Conference, the WWMA received a proposal from the Belt-Conveyor Scale WG (BCS WG) to amend paragraph N.3.1.3. The BCS WG stated that existing language in N.3.1.3. results in an excessive allowance for the variation in a belt. However, for belt-conveyor scales that can benefit from a smaller minimum division, the three division requirement can impose an excessively narrow restriction. It should be noted that variations in belt weight tend to be sinusoidal. In other words, the error caused by belt variations would be canceled if the material test were conducted using complete revolutions. The maximum belt variation would occur at 0.5, 1.5, 2.5, etc., revolutions. However, material tests are rarely conducted using complete revolutions of the belt.

During the 2009 NCWM Interim Meeting, the Committee heard a comment from Mr. Bill Ripka, Thermo Ramsey, supporting the proposal as written in the Committee’s recommendation and adding that the current language in HB 44 stating the current three scale interval deviation from an initial indication can lead to significant errors in scale accuracy. The Committee agreed with the comments from Mr. Ripka and recommended this item move forward as a Voting item.

At the 2009 NCWM Annual Meeting, the Committee received comments and recommendations from the February 2009 meeting of the BCS WG. The members of the WG came to general agreement that with regard to these systems, the conveyor belt needs to be uniform (minimum variations in the weight per unit of length of the belt), but the proposal as it exists in the Committee’s Interim Report is not well understood. The variation during a revolution of the belt is most important and will exhibit the most impact for BCS applications that may use a portion of a belt revolution to deliver a weighment (e.g., 2.5 belt revolutions). This could occur when loading individual trucks or railcars, or in some cases, with the quantity of material used for material tests. For larger quantities, such as loading a unit train, the error becomes insignificant.

The BCS WG reported that, after their meeting adjourned, an extended session of the meeting took place with a smaller group. The smaller group developed an amended proposal. However, the smaller group recommended that this item not go forward as a Voting item, but be given Informational status to allow more time to consider developing a revised proposal and to conduct additional research on the appropriate tolerance. The entire BCS WG was polled on the smaller group’s recommendation on the amended proposal and its proposed status. The majority of the responses agreed with the recommendation that this item needs further review and development, and its status should be made Informational.

During its open hearing at the 2009 NCWM Annual Meeting, the Committee received comments from Mr. Ripka, Thermo Ramsey and NIST WMD supporting the recommendation from the BCS WG. The Committee agreed with

the WG that more time is needed to conduct additional research on this item to determine the appropriate tolerance and revise the proposal. The Committee agreed to keep this item on its agenda as Informational.

At the 2010 NCWM Interim Meeting, the SMA submitted a comment supporting the intent of this item and encourages additional research to determine the correct allowable value to verify suitable belt consistency. The Committee agreed to keep this item on its agenda as an Informational item.

At its February 2010 meeting, the UNSWG on BCS discussed its carryover item. There was much discussion on the original purpose of the existing language that was adopted into HB 44 in 1985 as part of the revised BCS Systems Code (developed by the BCS Task Force). The WG did not reach a consensus on this item and will continue its work to develop a consensus position.

At the 2010 NCWM Annual Meeting, Mr. Ripka, Thermo-Fisher, provided the Committee with a letter regarding the status of the WG. Based on the progress of the sub-committee, and the pending receipt of actual field information as it relates to belt consistency, the sub-committee of the National BCS WG requests the National S&T committee to consider moving the Belt Consistency proposal from informational to developing. The sub-committee expects to have data ready for the fall 2010 regional conferences, or if data is slow in being provided, by the NCWM interim meeting in January, 2011. A complete copy of the letter can be viewed in Appendix A of this Report.

The Committee agreed with the recommendation to give this item Developmental status and move it to the list on Developmental items on the Committee's 2011 Interim Agenda.

During the 2010 WWMA Annual Technical Conference open hearings, Mr. Ripka, Thermo Scientific, speaking on behalf of the sub group of the BCS WG, reviewed the contents of the letter they submitted to the NCWM S&T Committee on September 9, 2010. (The letter from Thermo Fisher Scientific may be reviewed Appendix C S&T Item 321-1.) He recommended this proposal to be moved forward as a Voting item. Mr. Ripka added that a small survey was conducted at thirteen BCS installations to verify that these installations would fit within the new wording. He reported that twelve of the thirteen installations easily complied with the proposed requirements; the remaining scale was a non-commercial device. Mr. Ripka, speaking on behalf of Thermo Scientific, suggested deleting the last sentence of the proposal because the end value of the zero load test is already covered in paragraph N.3.1.2. Test of Zero Stability. Mr. Cook, NIST Technical Advisor, reported that the recommendations of the sub group were submitted to the entire BCS WG with a recommendation that the item be upgraded to the NCWM S&T Committee agenda as a Voting item.

The WWMA agreed with the recommendation of the sub group pending approval of the entire BCS WG in its letter ballot prior to January 2011 NCWM Interim Meeting. In response to the recommendations from Thermo Fisher, the WWMA did not feel comfortable supporting Mr. Ripka's suggested changes to delete the last sentence of the above proposal and suggested that this change be supported by the USNWG.

During the 2010 SWMA Annual Meeting, the SWMA received no comments on this issue during its open hearings. The SWMA S&T Committee heard from the NIST Technical Advisor and observed in the WWMA addendum sheets that the USNWG anticipates finalizing a recommendation on this issue in the near future. The SWMA supports the efforts of the USNWG and looks forward to considering future recommendations on this issue.

(See also the Committee's 2008 Annual Report for additional background information in Developing Item 360-2 Part 3 Item 2.)

331 VEHICLE-TANK METERS (VTM)

331-1 S.2.6. Thermometer Well, Temperature Determination.

Source: 96th NCWM S&T Committee, CWMA, WWMA, SWMA, and NEWMA

Purpose: To provide a means for inspectors and service personnel to determine the temperature of the product at the meter and, thus, enable them to apply paragraph N.5. Temperature Correction for Refined Petroleum Products.

Item Under Consideration: Add a new paragraph S.2. Design of Measuring Elements of the Vehicle-Tank Meters Code to section 3.31 VTM code to read as follows:

S.2.6. Thermometer Well, Temperature Determination - For test purposes, means shall be provided (e.g., thermometer well) to determine the temperature of the liquid either:

(a) in the liquid chamber of the meter, or

(b) in the meter inlet or discharge line immediately adjacent to the meter.

[Nonretroactive as of January 1, 2012]

Background/Discussion: During discussions of proposed changes (which were adopted in July 2010) to the tolerances for VTMs equipped with automatic temperature compensating systems (paragraph T.2.1.), meter manufacturers expressed concerns about how to ensure that consistent and appropriate test procedures and equipment be used by weights and measures officials during inspections of VTMs. WMD revised the EPOs for VTMs and presented this information during a training seminar in April 2010. In the process of revising and presenting the procedures, WMD received comments indicating that many VTMs are not equipped with means for determining the temperature of the product at the meter. Thus, the inspector is unable to properly apply paragraph N.5. Temperature Correction for Refined Petroleum Products, which states:

N.5. Temperature Correction for Refined Petroleum Products. – Corrections shall be made for any changes in volume resulting from the differences in liquid temperatures between the time of passage through the meter and the time of volumetric determination in the prover. When adjustments are necessary, appropriate petroleum measurement tables should be used.

(Added 2007)

In order for inspectors and service personnel to determine the difference between the temperature of the product at the meter and at the prover, some means is needed for determining the temperature of the product as it passes through the meter. Inspectors have reported that few VTMs are equipped with provisions such as a thermometer well at the meter that would enable them to determine the temperature of the product at the meter using a traceable thermometer. Consequently, the inspector is not able to make adjustments to the indications for changes due to temperature between the meter and the prover. Failing to account for differences in product temperature can, in some instances, introduce errors into the testing process, possibly resulting in the acceptance of a meter that is actually out of tolerance or the incorrect rejection of a meter that may actually be performing within applicable tolerance.

While the inspector could apply General Code paragraph G-UR.4.4. Assistance in Testing to require the installation of a thermometer well or other provision for determining the temperature of the product at the meter, the S&T Committee believes it is more cost effective to require this to be incorporated into the equipment purchased by the user. To minimize the impact on manufacturers and device owners, the S&T Committee proposes that this paragraph be applied nonretroactively.

Gasoline products expand/contract by a factor of about 0.00069 for every degree Fahrenheit change in temperature. Diesel fuels expand by a factor of about 0.00050 for every degree Fahrenheit change in temperature. NOTE: These values are approximations and the exact API/ASTM correction factors for the product being dispensed should be used in actual testing.

Consider the impact of a one degree temperature difference between the meter and prover on a 100-gallon test draft:

1 degree difference x 0.00069/ °F x 100 gallons = 0.069 gallons = 15.9 cubic inches for gasoline
1 degree difference x 0.00050/ °F x 100 gallons = 0.05 gallons = 11.6 cubic inches for diesel

If acceptance tolerance applies, the tolerance on a 100-gallon draft of a VTM meter would be 0.15 %, which is 0.15 gallons or 35 cubic inches. This means that almost half of the allowable tolerance is taken up by the effects of a one degree temperature difference on gasoline and about a third of the tolerance on diesel.

The LMD Code (Section 3.30.) already includes a paragraph (S.2.6. Temperature Determination - Wholesale Devices) requiring means for taking the temperature of the product at the meter for larger, wholesale meters and the Liquefied Petroleum Gas and Anhydrous Ammonia LMD Code (Section 3.32., paragraph S.2.5. Thermometer Well) requires this for all LPG & NH₃ meters. This proposed change to the VTM Code would also promote alignment of these codes.

Estimated Costs:

This could result in additional costs for equipping some meters with a thermometer well. However, at least one manufacturer indicated that the meters they produce for this application are already designed with the option for thermometer wells. According to one manufacturer, a new meter equipped with thermometer wells would cost a device owner approximately \$150 more than one without. No additional reasons against have emerged.

Because a thermometer well will enable inspectors and service personnel to determine the temperature of the product at the meter, this will encourage the use of corrections for temperature differences between the meter and the prover during the testing process. As a result, this will promote more consistent calibration and verification of meter accuracy and improve uniformity in measurements from company to company.

The weights and measures community may wish to review other measuring codes for consistency and the possible inclusion of similar requirements in a future proposal(s).

At its 2010 WWMA Annual Technical Conference, the WWMA received comments on this item during its open hearings suggesting that this was another attempt at temperature compensation. The WWMA S&T Committee disregarded those comments in their deliberation because they were inaccurate. The Committee voted to recommend that this item move forward as a Voting item on the NCWM S&T Committee Agenda.

At its 2010 SWMA Annual Meeting, the SWMA heard no comments on this issue during its open hearings. In reviewing the background and history for this item, the SWMA S&T Committee agreed that, given the potential impact of temperature differences between the meter and the prover for test drafts of the magnitude of those used in VTM testing, the proposed change is appropriate. The SWMA S&T Committee also agreed that the proposed paragraph should be nonretroactive as of January 1, 2012. Consequently, the Committee recommends that the item be forwarded to the NCWM S&T Committee as a Voting item as originally proposed by the S&T Committee.

At its fall 2010 Interim Meeting, NEWMA received a comment on the item during its open hearing that this proposal is not an automatic temperature compensation issue and that the temperature is used to correct for thermal expansion (or contraction) between meter and prover, which are calibrated to 60° F by state metrology labs. Before it can support the proposal, NEWMA wants to see more data on the potential impact to justify a need for this requirement.

331-2 T.4. Product Depletion Test

Source: Northeast Weights and Measures Association (NEWMA). This item was originally part of the 2010 Agenda Item 360-3 – Developing Items Part 3.31., Vehicle-Tank Meters - Item 1.

Purpose: Modify the VTM code to base the product depletion test tolerances on the meter's maximum flow rate (a required marking on all meters), rather than the meter size. This will enable more consistent application of the

tolerances for older meters, which are not required to be marked with the meter size, and address an unintentional gap which allows an unreasonably large tolerance for smaller meters.

Item Under Consideration: Amend paragraph T.4. as follows:

T.4. Product Depletion Test. – The difference between the test result for any normal test and the product depletion test shall not exceed one-half (0.5 %) percent of the volume delivered in one minute at the maximum flow rate marked on the meter. Tolerances for typical meters are tolerance–shown in Table T.4. Test drafts shall be of the same size and run at approximately the same flow rate.

[**Note:** The result of the product depletion test may fall outside of the applicable test tolerance as specified in Table 1. Accuracy Classes and Tolerances for Vehicle-Tank Meters]

Table T.4. Tolerances for <u>Typical</u> Vehicle-Tank Meters on Product Depletion Tests, Except Milk Meters <u>Refer to T.4. for meters with maximum flow rates not listed.</u>	
Meter-Size <u>Maximum Flow Rate</u>	Maintenance and Acceptance Tolerances
<u>Up to, but not including, 50 mm (2 in)</u> <u>114 Lpm (30 gpm)</u>	<u>1.70 L (104 in³)¹</u> <u>0.57 L (0.15 gal) (34.6 in³)¹</u>
<u>From 50 mm (2 in) up to, but not including, 75 mm (3 in)</u> <u>225 Lpm (60 gpm)</u>	<u>2.25 L (137 in³)¹</u> <u>1.1 L (0.30 gal) (69.3 in³)¹</u>
<u>75 mm (3 in) or larger</u> <u>378 Lpm (100 gpm)</u>	<u>3.75 L (229 in³)¹</u> <u>1.9 L (0.5 gal) (115 in³)¹</u>
<u>758 Lpm (200 gpm)</u>	<u>3.8 L (1.0 gal) (231 in³)¹</u>

¹ Based on a test volume of at least the amount specified in N.3. Test Drafts.

(Table Added 2005) (Amended 201X)

Alternatively, NEWMA proposed the following modifications to paragraph T.4., with larger tolerances for smaller meters.

T.4. Product Depletion Test. – The difference between the test result for any normal test and the product depletion test shall not exceed one-half (0.5 %) percent of the volume delivered in one minute at the maximum flow rate marked on the meter for meters rated higher than 378 Lpm (100 gpm), or six-tenths (0.6 %) percent of the volume delivered in one minute at the maximum flow rate marked on the meter for meters rated 378 Lpm (100 gpm) or lower. Tolerances for typical meters are tolerance–shown in Table T.4. Test drafts shall be of the same size and run at approximately the same flow rate.

[**Note:** The result of the product depletion test may fall outside of the applicable test tolerance as specified in Table 1.]

Table T.4. Tolerances for <u>Typical</u> Vehicle-Tank Meters on Product Depletion Tests, Except Milk Meters Refer to T.4 for meters with flow rates not listed.	
Meter-Size <u>Maximum Flow Rate</u>	Maintenance and Acceptance Tolerances
Up to, but not including, 50 mm (2 in) <u>114 Lpm (30 gpm)</u>	1.70 L (104 in³)¹ <u>0.57 L (0.18 gal) (41.6 in³)¹</u>
From 50 mm (2 in) up to, but not including, 75 mm (3 in) <u>225 Lpm (60 gpm)</u>	2.25 L (137 in³)¹ <u>1.1 L (0.36 gal) (83.2 in³)¹</u>
75 mm (3 in) or larger <u>378 Lpm (100 gpm)</u>	3.75 L (229 in³)¹ <u>1.9 L (0.6 gal) (139 in³)¹</u>
<u>758 Lpm (200 gpm)</u>	<u>3.8 L (1.0 gal) (231 in³)¹</u>

¹ Based on a test volume of at least the amount specified in N.3. Test Drafts.

(Table Added 2005) (Amended 201X)

Background/Discussion: This item was submitted to NEWMA at its 2008 Interim Meeting as an alternative to Item 331-1 (S.5.7. Meter Size) in 2008 NCWM Annual Report. This alternative would base the tolerances for the product depletion test on a percentage of the maximum flow rate rather than meter size. Justification provided to NEWMA by the submitter is as follows:

The NCWM S&T Committee received a proposal in 2008 to add new marking requirements to provide inspectors with a basis on which to assess tolerances since the meter size in inches is not currently marked on meters used in VTM systems. This solution would add a new marking requirement non-retroactively, which will not solve the problem until the entire fleet of meters presently in use are replaced with new meters. This could take a very long time, since VTMs can see many years of service. In addition, the compromise made when this item originally passed did not address the possibility that smaller meters, (e.g., down to ¼ in) could be mounted on a vehicle and thus, subject to these tolerances. Allowing the smallest current tolerance (104 in³) on a ¼ in meter delivering 2 gpm would be 22.5 % relative error for one minute of flow due to air passing through the meter. Even at 20 gpm for a 1 in meter, the relative error only drops to 2.25 %. That seems unconscionable. New York recommends going back to the 0.5 % of 1 minute of flow at the maximum rated flow rate for the meter that was part of the original proposal. The max flow rate must be marked on every meter under current HB 44 requirements, thus, the inspector will have the information necessary to correctly apply the tolerance. It is further recommended that the table provide tolerances for the common meter sizes which will handle most cases encountered in the field (i.e., 1¼-, 1½-, 2- and 3-inch meters with maximum flow rates of 30, 60, 100 and 200 gpm, respectively).

There may be concern that users will move to larger meter sizes to take advantage of the larger tolerances. It is not thought that this will happen since these systems cannot deliver much over 100 gpm without damaging storage tanks. In fact, most systems we have seen delivering heating oil are actually delivering at less than 80 gpm. If they move to a 200 gpm, 3-inch meter, rated at 40 to 200 gpm, they will then have to meet acceptance tolerances all the way down to 60 gpm which it is not believed that to be achievable on a consistent basis. We believe the typical 2-inch system will remain the mainstay of the industry.

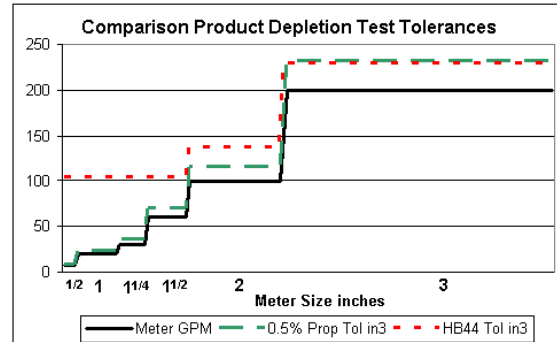
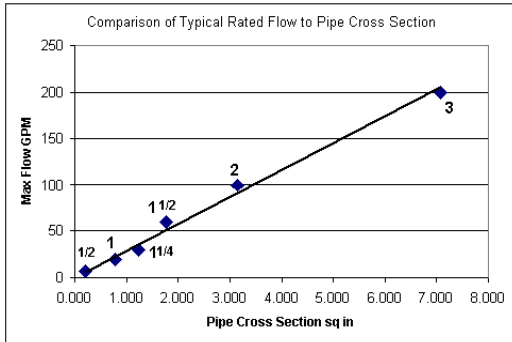
Graphs of the relationship of typical meter ratings to pipe cross section area show that positive displacement flow rates are clearly a function of pipe size. Any tolerance that does not reflect that relationship is fundamentally flawed in our view. For comparison, we have included a graphic comparison of the proposed tolerances.

The submitter also noted the following:

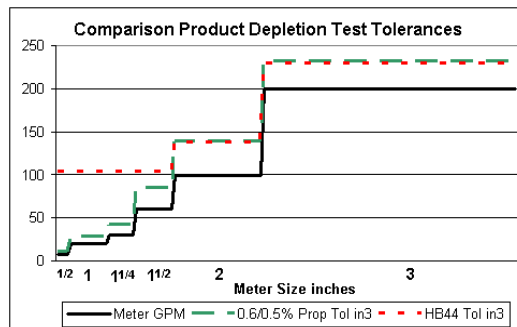
We recognize that the tolerances proposed will reduce the tolerances for meter sizes 2 inches and under. We could support some compromise to recognize diminishing returns on smaller meters, thus allowing a slightly larger tolerance (e.g., 0.6 %) at or below 100 gpm rated flow rate. At 0.6 % for a 2 inch (100 gpm) meter, the tolerance would be 139 in³, virtually identical to the existing tolerance.

The submitter also provided the following supporting graphics:

Option 1 – 0.5 % across the board:



Option 2 – 0.6 % up to and including 100 gpm and 0.5 % thereafter:



In its initial review of this item in 2008, NEWMA did not feel the proposed change was justified. As a result of discussions at subsequent meetings, NEWMA has since determined that this item is ready to be elevated for considerations by the NCWM S&T Committee.

At the 2010 NCWM Annual Meeting, the Committee heard comments from Mr. Andersen, New York, reiterating NEWMA’s request to place this item on the Committee’s 2011 Interim Agenda. The Committee agreed to NEWMA’s request and included this item on its 2011 Interim Agenda and submitted it to the 2010 fall regional weights and measures association meetings.

At its 2010 fall Interim Meeting, the CWMA S&T Committee recommended that this item remain a Developing item as one of the committee members was concerned that the conversion of the metric value may have been incorrectly or inconsistently rounded or truncated in the proposed amendments to Table 4.

At its 2010 Annual Technical Conference, the WWMA recommended that this item move forward as a Voting item. The WWMA believes the proposed amendments to Table T.4. will reduce the unnecessarily large tolerances for meters under 60 gpm (2 in meters) and more closely reflects existing tolerances of larger meters. The WWMA also recommends removing paragraph S.5.7. Meter Size since the language was adopted in 2009 to facilitate the application of the correct product depletion test tolerances, which were based on meter size. Since the item under

consideration uses meter size to calculate product depletion tolerances, the WWMA believes that paragraph S.5.7. is no longer necessary. During the voting session, Mr. Kurt Floren, Los Angeles County, California, commented he had no issue with the intent of the proposal, but asked that the NCWM Committee look into the mathematical agreement in the metric conversion listed in Table T.4. It was also suggested that it may be more appropriate to list the “inch-pound” (gpm) before the SI units in Table T.4.

At its 2010 Annual Meeting, the SWMA S&T Committee stated that it does not object to considering modifications to the tolerance to better address the product depletion test. However, it feels that additional time is needed for industry and weights and measures officials to study the proposed changes. The SWMA S&T Committee noted that the product depletion tolerance was amended only five years ago and a new marking requirement was added to correspond to that requirement a few years later in 2009. The SWMA S&T Committee feels that, before making yet another change, thoughtful consideration needs to be given to ensure that any changes are appropriate. The SWMA agreed with the SWMA’s S&T Committee’s justification and its recommendation that this item be made an Information item on the NCWM Committee agenda.

At its 2010 Annual Meeting, NEWMA restated its support for this item and looks forward to input from the other regional weights and measures associations and other interested parties.

336 WATER METERS

336-1 Appendix D- Definition of Utility Type Water Meters

Source: Western Weights and Measures Association (WWMA).

Purpose: To add a definition for the term “utility type water meter,” which is used with increased frequency in the Water Meters code.

Item Under Consideration:

utility type water meter. A device used for the measurement of water generally applicable to meters installed in residences or business establishments, excluding batching meters. [3.36]
(Added 201X)

Background/Discussion: With the recent changes to the Water Meter Code for utility type meters, it was made apparent that a definition for a utility type meter was not listed in Appendix D – Definitions of HB 44. Several water meter manufacturers believe that a clear definition for these types of metering instruments is needed. The manufacturers that developed and support this item are:

Mr. Andre Noel	Neptune Technology Group Inc.
Mr. George De Jarlais	Badger Meter
Mr. Scott Swanson	Sensus Metering
Mr. Alex Watson	Elster AMCO
Mr. Scott Bruneau	Master Meter

During the 2010 WWMA Annual Technical Conference, the WWMA S&T Committee agreed with the justification for the definition provided by the submitters. The Committee revised the proposed definition for a “utility type water meter” to eliminate the term “utility type” from the body of the definition. The WWMA recommended that this item (as revised by the WWMA S&T Committee) move forward as a Voting item on the NCWM S&T Committee Agenda.

At the 2010 SWMA Annual Meeting, the SWMA S&T Committee heard no opposition to establishing a definition for “utility type water meter.” Like the WWMA, the SWMA S&T Committee noted that the definition as originally proposed included the word that was being defined in the definition itself and was, therefore, still not clear. The Committee reviewed alternative language developed by the WWMA and agreed that the alternative language was

preferable. Consequently, the SWMA voted to recommend that the language as modified by the WWMA move forward as a Voting item on the NCWM S&T Committee Agenda.

442 FARM MILK TANKS

442-1 N.5.1. Verification of Master Metering Systems

Source: Central Weights and Measures Association (CWMA) (This item was originally part of the 2010 Agenda Item 360-2- Developing Items Part 4.42, Farm Milk Tanks - Item 1: N.5.1. Verification of Master Metering Systems.)

Purpose: Eliminate unnecessary verification testing for master meters capable of operating within a prescribed percent of the applicable tolerance.

Item Under Consideration: Amend paragraph N.5.1. as follows:

N.5.1. Verification of Master Metering Systems. – A master metering system used to gauge a milk tank shall be verified before and after the gauging process. A master metering system used to calibrate a milk tank shall be verified before starting the calibration and re-verified every quarter of the tank capacity or every 2000 L (500 gal), whichever is greater. **A master metering system capable of operating within 25 % of the applicable tolerance in T.3. Basic Tolerance Values needs only be verified before and after the gauging process.**

(Added 201X)

Background/Discussion: The CWMA received a proposal at its fall 2008 Interim Meeting to modify paragraph N.5.1. Verification of Master Metering Systems in NIST HB 44 Section 4.42. Farm Milk Tanks. USDA provided data suggesting that mass flow meters currently used to test milk tanks would not have to be verified every quarter of the tank capacity, or every 2000 L (500 gal), whichever is greater. Because no supporting data was provided to show that all mass flow meters will perform to the same standard, the CWMA originally recommended this proposal be Informational.

At its fall 2008 meeting, NEWMA recommended this proposal be Informational. NEWMA forwarded the following additional justification for the proposed change from Mr. Richard Koeberle, Federal Milk Market Administrator:

The use of a mass flow meter has eliminated the variations seen in other types of meters used to calibrate or check farm bulk milk tanks. The reverification of the meter at every quarter of tank capacity adds time and potentially introduces errors by requiring the hose or valves to be moved before the tank is totally filled. This proposal originated by Mr. Tom MacNish, Market Administrator, and was presented to the CWMA in September [2008]. Mass flow meters have been used extensively in their market with excellent results.

At the 2010 NCWM Annual Meeting, the Committee heard comments from Mr. Andersen, New York, reiterating NEWMA's request to place this item on the Committee's 2011 Interim Agenda.

The Committee agreed to NEWMA's request and included this item on its 2011 Interim Agenda and submitted it to the 2010 fall regional weights and measures association meetings.

At its 2010 fall Interim Meeting, the CWMA heard comments during the open hearing about testing from the USDA; which performs the most testing of this type of device for farm milk tanks in the region. Additional comments noted the increased uncertainty resulting from the connecting and disconnecting of valves and hoses in order to verify the master meter at every 2000 L (500 gal) when calibrating a farm milk tank opposed to testing the master meter only at the beginning and end of a farm milk tank calibration. Based on comments heard from the floor and data provided by Mr. Koeberle and Mr. MacNish the, CWMA S&T Committee believes that this proposal is ready to move forward as a Voting item on the NCWM S&T Committee agenda.

During its 2010 WWMA Annual Technical Conference, the WWMA S&T Committee reviewed the submitted data in a file titled “cali_massflowsheet.xlsx.” The S&T Committee noted that the results in the column titled “Diff in cc” appears to be the difference between the “meter reading in gallons” and the “prover reading in gallons” without any conversion to cubic centimeters (cc) in the “Diff in cc” column (see example below). Additionally, the title for the “Diff in cc” column could be amended to show that the differences between the prover and meter indications are in terms of under or over registration

Meter Gal	Prover Gal	Diff in cc
50.00	49.99	(0.01)

It was difficult to analyze the data because of a lack of information describing test parameters, legends, and column headings. The WWMA S&T Committee recommends the NCWM S&T Committee seek additional information on the data describing the test conditions and type of mass flow meter used. Additionally, a general summary of the data would help in assessing the proposal as would a clarification of whether or not the reduced re-verification applies to other meter technologies (e.g., PD meter, turbine meter, etc.). The WWMA recommends that this item move forward as an Information item on the NCWM Interim agenda to allow time to seek the additional information on the submitted data.

At its 2010 Annual Meeting, the SWMA S&T Committee recognized the efficiencies realized by using a master meter to test farm milk tanks. Allowing fewer verification points to be used when a master meter can be shown to perform within a tighter tolerance would provide for further efficiency in the test process while maintaining confidence in the test. Consequently, the SWMA supports the proposal as written.

At its fall 2010 Interim Meeting, a representative of New York volunteered to work with the Market Administrators to address WWMA’s concerns and obtain a summary of the analysis.

360 OTHER ITEMS

360-1 International Organization of Legal Metrology (OIML) Report

Many issues before the OIML, the Asian-Pacific Legal Metrology Forum (APLMF), and other international groups are within the purview of the Committee. Additional information on OIML activities will appear in the Board of Directors agenda and Interim and Final Reports and on the OIML website at <http://www.oiml.org>. NIST WMD staff will provide the latest updates on OIML activities during the open hearing sessions at NCWM meetings. For more information on specific OIML-related device activities, contact the WMD staff listed in the table below. The OIML projects listed below represent only currently active projects. For additional information on other OIML device activities that involve WMD staff, please contact WMD using the information listed below:

NIST Weights and Measures Division (WMD) Contact List for International Activities	
Contact Information	Responsibilities
Postal Mail and Fax for All Contacts:	NIST WMD 100 Bureau Drive MS 2600 Gaithersburg, MD 20899-2600 Tel: (301) 975-4004 Fax: (301) 975-8091
Mr. John Barton (LMDG) (301) 975-4002 john.barton@nist.gov	<ul style="list-style-type: none"> •R 21 “Taximeters” •R 50 “Continuous Totalizing Automatic Weighing Instruments (Belt Weighers)” •R 60 “Metrological Regulations for Load Cells” (jointly with Ken Butcher) •R 106 “Automatic Rail-weighbridges”
Mr. Kenneth Butcher (LMG) (301) 975-4859 kenneth.butcher@nist.gov	<ul style="list-style-type: none"> •D 1 “Elements for a Law on Metrology” •TC 3 “Metrological Control” •TC 3/SC 1 “Pattern Approval and Verification” •TC 3/SC 2 “Metrological Supervision” •TC 6 “Prepackaged Products” •R 60 “Metrological Regulations for Load Cells” (jointly with John Barton)
Mr. Steven Cook (LMDG) (301) 975-4003 steven.cook@nist.gov	<ul style="list-style-type: none"> •R 76 “Non-automatic Weighing Instruments”
Dr. Charles Ehrlich (ILMG) (301) 975-4834 charles.ehrlich@nist.gov	<ul style="list-style-type: none"> •CIML Member for the United States •V1 “International vocabulary of terms in legal metrology (VIML)” •V2 “International vocabulary of basic and general terms in metrology (VIM)” •B3 “OIML Certificate System for Measuring Instruments” •B6 “OIML Directives for the Technical Work” •B 10 “Framework for a Mutual Acceptance Arrangement (MAA) on OIML Type Evaluations” •TC 3/SC 5 “Expression of Uncertainty in Measurement in Legal Metrology Applications,” “Guidelines for the Application of ISO/IEC 17025 to the Assessment of Laboratories Performing Type Evaluation Tests” •TC 3 “Metrological Control” •ISO/IEC Guide to the Expression of Uncertainty in Measurement”
Mr. Richard Harshman (LMDG) (301) 975-8107 richard.harshman@nist.gov	<ul style="list-style-type: none"> •R 51 “Automatic Catchweighing Instruments” •R 61 “Automatic Gravimetric Filling Instruments” •R 107 “Discontinuous Totalizing Automatic Weighing Instruments” (totalizing hopper weighers) •R 134 “Automatic Instruments for Weighing Road Vehicles In-Motion and Measuring Axle Loads”
Ms. Diane Lee (LMDG) (301) 975-4405 diane.lee@nist.gov	<ul style="list-style-type: none"> •R 59 “Moisture Meters for Cereal Grains and Oilseeds” •R 92 “Wood Moisture Meters – Verification Methods and Equipment” •R 121 “The Scale of Relative Humidity of Air Certified Against Saturated Salt Solution” •TC 17/SC 8 “Measuring Instruments for Protein Determination in Grains”

NIST Weights and Measures Division (WMD) Contact List for International Activities			
Contact Information		Responsibilities	
Mr. Ralph Richter (ILMG) (301) 975-3997 ralph.richter@nist.gov		<ul style="list-style-type: none"> •D 11 “General Requirements for Electronic Measuring Instruments” •R 35 “Material Measures of Length for General Use” •R 49 “Water Meters” (Cold Potable Water & Hot Water Meters) •R 71 “Fixed Storage Tanks” •R 80 “Road and Rail Tankers” (static measurement) •R 85 “Automatic Level Gauges for Measuring the Level of Liquid in Fixed Storage Tanks” •R 95 “Ship’s Tanks” •R 117 “Measuring Systems for Liquids Other Than Water” (all measuring technologies) •R 118 “Testing Procedures and Test Report Format for Pattern Examination of Fuel Dispensers for Motor Vehicles” •TC 3/SC 4 “Verification Period of Utility Meters Using Sampling Inspections” •R 137 “Gas Meters” (all measuring technologies) •R 140 “Measuring Systems for Gaseous Fuel” (i.e., large pipelines) •ISO TC 30/SC 7 “Water Meters” 	
Dr. Ambler Thompson (ILMG) (301) 975-2333 ambler@nist.gov		<ul style="list-style-type: none"> •D 11 “General Requirements for Electronic Measuring Instruments” •D 16 “Principles of Assurance of Metrological Control” •D 19 “Pattern Evaluation and Pattern Approval” •D 20 “Initial and Subsequent Verification of Measuring Instruments and Processes” •D 27 “Initial Verification of Measuring Instruments Using the Manufacturer’s Quality Management System” •D 31 “General requirements for software controlled measuring instruments” •R 34 “Accuracy Classes of Measuring Instruments” •R 46 “Active Electrical Energy Meters for Direct Connection of Class 2” 	
Ms. Juana Williams (LMDG) (301) 975-3989 juana.williams@nist.gov		<ul style="list-style-type: none"> •R 81 “Dynamic Measuring Devices and Systems for Cryogenic Liquids” •R 139 “Compressed Gaseous Fuels Measuring Systems for Vehicles” 	
LIST OF ACRONYMS			
B	Basic Publication	LMDG	Legal Metrology Devices Group
CIML	International Committee of Legal Metrology	P	Project
D	Document	R	Recommendation
ILMG	International Legal Metrology Group	SC	Subcommittee
LMG	Laws and Metrics Group	TC	Technical Committee

The WWMA and the SWMA support these issues and the related device activities as an Informational item.

360-2 Developing Items

The NCWM established a category of items called Developing items as a mechanism to share information about emerging issues which have merit and are of national interest, but have not received sufficient review by all parties affected by the proposal or that may be insufficiently developed to warrant review by the Committee. The items in this section have been designated as Developing items by the submitter and/or the Committee based on an assessment of their relative stage of development. The Developing items are currently under review by at least one regional association, technical committee, or organization.

Developing items are listed in Appendix C according to the specific HB 44 code section under which they fall (e.g., a scale-related item appears in part 2.20 which corresponds to NIST HB 44 Section 2.20 Scales Code). Periodically, a proposal will be removed from the Developing item agenda without further action because the submitter recommends it be withdrawn. Any remaining proposals will be renumbered accordingly.

The Committee encourages interested parties to examine the proposals included in Appendix C and send their comments to the contact listed in each item. The Committee asks that the regional associations and NTETC sectors continue their work to develop each proposal fully. Should an association or sector decide to discontinue work on an item, the Committee asks that it be notified.

In future Committee reports, the Committee plans to include only a brief summary and point of contact for each Developing item in this section and will post any additional details on the item on the Committee's web page on the NCWM web site.

Mr. Steve Giguere, Maine, Chairman
Mr. Kenneth Ramsburg, Maryland
Mr. Paul Moyer, Nebraska
Mr. Doug Deiman, Alaska
Mr. Brett Gurney, Utah

Mr. Ted Kingsbury, Measurement Canada, Technical Advisor
Mr. Steven Cook, NIST, Technical Advisor
Ms. Tina Butcher, NIST, Technical Advisor

Specifications and Tolerances Committee

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Appendix A – Developing Items

Item 360-2: Developing Items

In future Committee reports, the Committee plans to include only a brief summary and point of contact for each Developing item in this section and will post any additional details on the item on the Committee's web page on the NCWM web site.

Part 2.20. Weigh-In-Motion Vehicle Scales for Law Enforcement – Work Group

Source: Mr. Richard Harshman, NIST, on behalf of the U.S. Federal Highway Administration (FHWA)

Purpose: Introduce a new Developing Item on the Specification and Tolerances Committee 2011 Agenda to keep the weights and measures community apprised of work to develop standards for weigh-in-motion (WIM) scale systems and to encourage their participation in this work.

Item Under Consideration: The FHWA is forming a U.S. National Work Group (USNWG) to develop proposed standards that would apply to WIM scale systems used to screen or sort commercial vehicles for possible violations of legal roadway weight limits with the ultimate goal of bringing the proposed standards before the weights and measures community for possible inclusion in HB 44. FHWA has been collaborating with NIST WMD and the commercial vehicle enforcement community to identify industry experts, device users, regulatory officials, and others interested in participating in the WG. The WG plans to develop proposed specifications, tolerance, and other technical requirements applicable to WIM scale systems used in official use for the enforcement of law or for the collection of statistical information by government agencies.

Background/Discussion: The nation's highways, freight transportation system, and enforcement resources are being strained by the volume of freight being moved and the corresponding number of commercial vehicles operating on its roads. Traditional, manual-based vehicle inspection activities simply cannot keep pace with anticipated truck volume increases. Current U.S. Department of Transportation (DOT) forecasts project freight volumes to double by 2035 and commercial vehicles to travel an additional 100 billion miles per year by 2020. WIM technology has been targeted by FHWA and Federal Motor Carrier Safety Administration (FMCSA) to a technology capable of supporting more effective and efficient truck weight enforcement programs.

Several DOT efforts are underway and planned for the future to maintain adequate levels of enforcement that ensure equity in the trucking industry market and protection of highway infrastructure. Judicial support for enforcement decisions to apply more intense enforcement actions on specific trucks depends on support from the U.S. legal metrology community. Standards are needed in HB 44 to address the design, installation, accuracy, and use of WIM systems used in a screening/sorting application. The implementation of a uniform set of standards will greatly improve the overall efficiency of the nation's commercial vehicle enforcement process.

Once adopted by the truck weight enforcement community, these requirements will enhance the accuracy of the nation's WIM scale systems, serve as a sound basis for judicial support of next-generation truck weight enforcement programs and result in fewer legally loaded vehicles being delayed at static weigh station locations, thus reducing traffic congestion and non-productive fuel consumption and improving the movement of freight on our nation's roadways.

During the fall 2010 CWMA Interim Meeting, a comment was heard from the floor during its open hearings that WIM scales could be used for enforcement issues and evaluating or assessing fines to overweight trucks. Currently most of these scales are used for audit purposes only. The CWMA S&T Committee believes that the efforts to establish requirements for WIM scales has merit, and when fully developed, will assist in expediting commerce by not having to reweigh clearly legal highway vehicles while protecting roadways from vehicles that exceed legal highway load limits.

At the 2020 WWMA Annual Technical Conference, Mr. Stephen Langford, Cardinal Scales, stated during the open hearings that he is a member of the WG and supports adding language defining performance parameters of WIM devices for use in law enforcement. Mr. Langford added that the WG will be considering other existing standards to help develop the language in HB 44 (e.g., OIML R 134 “Automatic instruments for weighing road vehicles in motion and measuring axle loads”). Mr. Kurt Floren, Los Angeles County, added that even though these devices are non commercial they are covered under the scope of HB 44 General Code Application paragraph G-A.1.(c) Commercial and Law Enforcement Equipment.

At its 2010 SWMA Annual Meeting, the SWMA S&T Committee heard during the open hearing comments from Mr. Langford, Cardinal Manufacturing, supporting the direction of this work group. Mr. Langford noted that these WIM scales are not currently used to levy fines, but rather to screen for overweight trucks. He noted that the WG is just getting started and that Cardinal is looking forward to participating in this work. Mr. Max Gray, Florida questioned whether putting requirements for highway WIM devices in HB 44 would obligate jurisdictions to conduct tests of these devices. While he doesn't oppose the inclusion of requirements in general, he questioned the availability of resources to accommodate the additional workload given the extreme budget restrictions many jurisdictions are facing. Ms. Tina Butcher, NIST WMD, noted that DOT reported that highway weight enforcement officials are concerned that the use of the scales in screening will be challenged without reference to a recognized standard. Since many of these agencies currently reference HB 44, they felt that recognition of these devices in NIST HB 44 as law enforcement equipment would lend credibility and consistency to the design, use, accuracy, and application of this equipment.

At its 2010 Annual Meeting, the SWMA S&T Committee stated its support for the efforts of the WG. However, given some of the concerns and questions raised at the open hearings about resources for testing, that committee did not want to take a position on this issue until it has more information about the direction of the work group.

During the 2010 fall NEWMA Interim Meeting, comments were heard during its open hearing that supported the formation of the WG but questioned what role existed for the NCWM S&T Committee at this time.

Part 3.30. Liquid-Measuring Devices (LMD)- Item 1: Price Posting and Computing Capability and Requirements for a Retail Motor-Fuel Dispenser (RMFD)

Source: 2009 Carryover Item 330-3. This item originated from WMD and the regional associations and first appeared on the Committee's 2007 agenda.

Purpose: To review and update criteria in the LMD Code related to price posting and computing capability on RMFDs to reflect current market practices.

Item Under Consideration: The Committee was asked to consider a proposal to make modifications to Section 3.30. LMD Code to address price posting and computing capability for RMFD. Full details of the recommendation are found in the Committee's 2009 Interim and Final Reports. The Committee believes that changes are needed to the LMD Code; however, based on comments received it does not believe these proposed changes adequately address people's concerns.

Key Points:

- Current LMD Code requirements relative to unit price posting and selection and total price computation were developed to address marketing practices in place in the early 1990s; primarily cash/credit/debit forms of payment.
- Marketing practices have changed since the 1990s, and the LMD Code does not adequately address these changes with regard to the display, posting, and selection of unit price information or total price information at various points in a transaction.
- There appears to be general agreement in the weights and measures community that changes are needed to the LMD Code in HB 44 to better reflect current market practices.

- Comments indicate the current proposal being considered by the Committee does not adequately address concerns, particularly on the parts of Weights and Measures officials.
- Weights and Measures officials are concerned that customers be given adequate information at all points of the transaction, not just at the end.
- Regional Weights and Measures associations and industry comments indicate support for a work group to further develop this issue.
- The S&T agreed to establish a work group to further develop this issue and present an alternative recommendation for the S&T to consider.

Background/Discussion: In the early 1990s, various sections of the LMD Code in HB 44 (including paragraphs S.1.6.4. Display of Unit Price and Product Identity, S.1.6.5.4. Selection of Unit Price, UR.3.2. Unit Price and Product Identity, and UR.3.3. Computing Device) were modified to address multi-tier pricing applications, such as cash or credit in instances where the same product is offered at different unit prices based on the method of payment or other conditions of the sale. Since that time, marketing practices have evolved to include the addition of new practices, such as frequent shopper discounts and club member discounts. Numerous questions have been posed to WMD and Weights and Measures officials regarding the requirements for posting unit prices, calculation of total price, customer-operated controls, and other related topics, such as the definitions for associated terminology.

It is clear from these questions that changes are needed to HB 44 to ensure the requirements adequately address current marketplace conditions and practices. WMD has raised this issue with the Committee, and has also discussed a variety of pricing practices with individual state and local Weights and Measures jurisdictions.

The WMD reviewed the existing requirements and their application to current market practices and collected information on a number of scenarios, including the following:

- | | |
|--|--|
| (1) Frequent shopper discounts | (8) Full service |
| (2) Club member discounts | (9) Self service |
| (3) Discount for prepaying cash (to prevent “drive-offs”) | (10) Progressive discounts based on volume of motor-fuel purchased |
| (4) Prepay at the cashier for credit sales | (11) Coupons for discounts on immediate or future purchases |
| (5) Discounts for purchasing store products | (12) Rebates (e.g., use of oil company credit card) |
| (6) Discounts for purchasing a service (e.g., carwash) | (13) Day of the week discounts |
| (7) Targeted group discounts (e.g., Tuesday – ladies 5 cents off per gallon) | |

Note: The conditions under some of these scenarios may not typically fall under the authority of Weights and Measures jurisdictions.

The WMD expressed an interest in receiving input from the weights and measures community about the various practices and pricing structures in use, and indicated it welcomed opportunities to discuss this item at regional Weights and Measures associations to ensure the item is adequately addressed.

The regional Weights and Measures associations agreed that changes are needed and encouraged WMD to continue development of the issue. At the 2008 NCWM Interim Meeting, Ohio Weights and Measures submitted a proposal to modify various sections of the LMD Code to the Committee. With a specific proposal to consider, the Committee elevated the item to Information status for further review and input.

In 2008 and 2009, the Committee heard comments from all of the regional Weights and Measures associations (including the CWMA), industry, and individual NCWM members that, while changes are needed to the LMD Code, the changes proposed through the CWMA do not meet the needs of the marketplace (see the Committee’s 2008 and 2009 Final Reports for details of specific concerns). A key concern raised by Weights and Measures officials was the importance for consumers to have full information about the purchase price of the product before they dispense the fuel and to be able to follow all aspects of the transaction.

The CWMA recommended establishment of a small WG to further develop the issue and encouraged consideration of points such as the following:

1. discounts calculated at the pump and others at the counter;
2. level of consumer responsibility;
3. can the dispensers do tier pricing;
4. competitors complaining about non-uniformity of enforcement;
5. discounts should be done electronically; and
6. all is okay as long as the receipt explains the transaction.

NIST WMD agreed to form a small WG to further study this issue and held an initial meeting of interested parties in July 2008. A reduction of staff at NIST prevented subsequent work on this issue. The S&T Committee continued to hear requests from the regional associations and industry regarding the importance that this work be continued and urging that NIST allocate resources to the project. Mr. John Eichberger, National Association of Convenience Stores, offered to coordinate assistance from some of the association's interested members at the point where work would resume. See the Committee's 2008 and 2009 Final Reports for additional details on this effort.

At its fall 2009 meeting, the CWMA recommended that this item remain Informational and urged resources be committed to its further development. CWMA members commented that price posting continues to be a problem, noting that the current language in NIST HB 44 does not reflect current market practices and the language needs to be either fixed or removed from the Handbook. The CWMA also requested that the NCWM sponsor a WG to address this issue.

At its fall 2009 meeting, NEWMA agreed that this is a priority item and wants to encourage the formation of a WG as soon as possible. NEWMA further noted comments heard during its meeting:

- As long as terms and conditions are made clear prior to sale, the transaction should be allowed.
- Businesses should purchase the correct equipment (according to HB 44) for their marketing strategy.
- This item needs to move forward as a priority.
- We need to find some remedy for businesses that have older equipment.
- It is very difficult to take a hard line (follow HB 44 exactly) on this item.
- We must enforce equally and provide a level playing field.
- HB 44 is antiquated and should be revised.

At its fall 2009 meeting, the SWMA recommended that NIST WMD resume working on this proposal as soon as resources are available. NIST should include Mr. Eichberger and other sectors that are interested in the work and any stakeholders impacted by proposals to modify the LMD code relative to price posting and computing for RMFDs.

Prior to the 2010 Interim Meeting, NIST reallocated additional resources to work on this issue and announced that Ms. Juana Williams, NIST WMD, would lead the effort to renew the WG. Working in collaboration with the S&T Committee, Ms. Williams held an informal meeting during the 2010 Interim Meeting to allow interested parties to further discuss the issue, share thoughts about next steps, and indicate interest in participating in the WG. That meeting was well attended with 29 NCWM members participating and a number of useful comments were made. Prior to the open hearings, Ms. Williams gave the Committee an overview of the informal meeting and an update on the plan to renew the WG.

At its open hearings, the S&T Committee received positive comments regarding NIST's reallocation of resources to this project and agreed that reviewing and revising current requirements is important. The Committee continues to strongly support the intent of the proposal and recognizes that significant additional development is needed. The Committee believes that this can best be done through an S&T WG, and decided to give this item Developing status until the WG develops a proposal for consideration by the Conference. After collaborating with NCWM Chairman, Randy Jennings, the Committee Chair indicated that the work group should be chaired by an NCWM voting member under the technical direction of NIST. The Committee asks that Juana Williams collaborate with the Chair regarding possible candidates for the chair based on those who have indicated an interest in serving on the WG. The Committee asks that the WG provide frequent updates on its progress to the Committee and to the regional Weights and Measures associations. The Committee also asks that the WG communicate a work plan and time line after its first official meeting.

During the July 2010 NCWM Annual Meeting, the RMFD Price Posting and Computing Capability U.S. National Work Group wishes to express its thanks to its sponsor the NCWM S&T Committee and also to NCWM members for their contributions to during the meeting discussions at the 2010 NCWM Annual Meeting.

The WG offered this abbreviated summary on the direction it will take, based on the task it was given by the S&T Committee and input received at the meeting. The WG is tasked with reviewing the current NIST Handbook 44 Section 3.30 LMD Code to determine if the code requirements address rapidly changing practices for marketing retail motor-fuels to the general public. The WG is also tasked with developing proposals for modifying those codes that need changing and preparing them for a review by the S&T Committee.

The WG has laid out several next steps to establish a work plan to achieve this goal:

- (1) The WG will work using a teleconference and web conference meeting format to maximize its resources. The WG has a 1 ½ hour meeting tentatively scheduled for mid August 2010 to begin its development of the work plan;
- (2) The WG will establish a tentative timeline for completing this task and will submit that timeline by e-mail to the S&T Committee for its consideration to determine if that time frame meets with the approval of the Committee;
- (3) To better manage this task and ensure input from all groups of stakeholder affected by these marketing practices the WG will consist of approximately 12-15 individuals who represent at least each of the following organizations/agencies/associations:

CWMA	API
NEWMA	Convenience Store Associations
SWMA	Petroleum Marketers Associations
WWMA	RMFD Manufacturers
Consumer Groups	

The WG is seeking input from any stakeholders that might have been overlooked and should be part of this effort. The WG will contact representatives from each group who expressed interest in the work to fill the positions on the Work Group.

The WG is also seeking additional information to ensure that it does not reinvent code sections that already work to address marketing practices. Therefore, the WG requested copies of any recent legislation or policies enacted to address these marketing scenarios be forwarded to its Chair by August 31, 2010. The WG wishes to examine various examples of marketing practices to establish some general categories for classifying these marketing practices and analyzing if a practice is adequately addressed by any codes it might develop. The WG will develop a form for stakeholders to provide information on marketing practices they regularly encounter which are either (1) not addressed in the code, (2) result in nonuniform interpretation of the application of code sections, or (3) are difficult to enforce because of conflicting codes that apply to the equipment's design and use.

S&T Committee 2011 Interim Agenda
Appendix A – Developing Items

Anyone interested in participating in this WG or with questions about this issue is asked to contact NIST WMD Technical Advisor Ms. Juana Williams by e-mail at juana.williams@nist.gov, by telephone at (301) 975-3989, or in writing at NIST 100 Bureau Drive – Stop 2600, Gaithersburg, MD 20899-2600.

Appendix B - Attachments

S&T Agenda Item 310-3: Examples of Repaired Devices/Repaired Elements				
2002 NCWM Annual Report Agenda Item 310-2A from the Remanufactured Devices Task Force				
Section I Examples of Repaired Devices/Repaired Elements (no metrological change)				
	Remanufactured Device	Remanufactured Element	Still Traceable to NTEP CC	Marking Required
Weighing Activity				
I-1-W A scale that is disassembled for the purpose of cleaning and repairing pivots and bearings this activity covers cleaning and packing bearings.	No	No	Yes	No
I-2-W A device in which the electronic components have been changed on site using original manufacturer's factory components parts or NTEP traceable replacement parts.	No	No	Yes	No
I-3-W A weighing element that is replaced on site with original manufacturer's factory parts or NTEP traceable replacement parts. This does not prohibit repairs by other than the original manufacturer.	No	No	Yes	No
I-4-W A class III L scales in which a section adjustment (mechanical or electronic) is made and some disassembly is required.	No	No	Yes	No
I-5-W A mechanical scales in which a nose iron is adjusted and some disassembly is required.	No	No	Yes	No
I-6-W Replacement of Liquid Crystal Display (LCD) or non-metrological computer boards or chips.	No	No	Yes	No
I-7-W Replacement of pivots and bearings on mechanical scales. NOTE: Pivots and bearings would have to meet the original manufacturer's specifications for the scale to operate correctly.	No	No	Yes	No
I-8-W Replacement of some or all load cells with load cells identical (same manufacturer, make and model) to those removed.	No	No	Yes	No
I-9-W Replacement of some or all load cells with metrologically equivalent (n_{max} , v_{min} , etc.) load cells from a different manufacturer, provided the load cells are of the same basic type that have an NTEP CC and can be replaced without modification to the basic design of the load cell mounting assembly.	No	No	Yes	No
I-10-W Replacement of all load cells of a particular technology (analog, digital, and hydraulic) in a scale system with approved and compatible digital load cells that have an NTEP CC provided the cells can be replaced without any modification to the basic design of the load cell mounting assembly.	No	No	Yes	No
Measuring Activity				
I-1-M Disassembly of a motor fuel dispenser for the purpose of replacing a meter gasket.	No	No	Yes	No

S&T Agenda Item 310-3: Examples of Repaired Devices/Repaired Elements				
2002 NCWM Annual Report Agenda Item 310-2A from the Remanufactured Devices Task Force				
I-2-M A device in which the electronic components have been replaced on site using original manufacturer's factory components, parts, or NTEP traceable replacement parts.	No	No	Yes	No
I-3-M Any measuring element that is replaced on site with original manufacturer's factory parts or NTEP traceable replacement. This does not prohibit repairs by other than the original manufacturer.	No	No	Yes	No
I-4-M Replacement of nozzles on gasoline dispensers.	No	No	Yes	No
I-5-M Replacement of LCD or non-metrological computer boards or chips.	No	No	Yes	No
I-6-M Adjustment of ranger gears on meters (some disassembly required). This activity applies to meters calibrated with a range of gears rather than an adjustor.	No	No	Yes	No
I-7-M A service agency replaces a meter that cannot be brought into the proper calibration with a used meter (at the service station) of the same model and the meter is recalibrated.	No	No	Yes	No
I-8-M A used equipment dealer replaces a meter that cannot be brought into the proper calibration with a used meter (in their shop) of the same model taken from a used dispenser and the meter is recalibrated when installed and placed back in service.	No	No	Yes	No
I-9-M A remanufacturer disassembles a dispenser to replace a meter that cannot be brought into the proper calibration with a used meter (in their plant) of the same model taken from a used dispenser and the meter is recalibrated when installed and placed back in service.	No	No	Yes	No
I-10-M A service agency partially disassembles a motor fuel dispenser, cleans the dispenser and replaces the meter with a meter identical (same manufacturer, make and model) to that removed.	No	No	Yes	No
Section II - Examples of Remanufactured Devices/Remanufactured Elements (no metrological change)				
	Remanufactured Device	Remanufactured Element	Still Traceable to NTEP CC	Marking Required
Weighing Activity				
II-1-W A scale that is disassembled for the purpose of checking for worn parts, cleaning the scale, and replacing some or all of the scale's load cells with remanufactured load cells provided the load cells are remanufactured by the original manufacturer or are remanufactured metrologically equivalent (n_{max} , v_{min} , etc.) load cells with an NTEP CC and are identical to those removed.	No	Yes – Load Cells No – Weighing Element	Yes	Yes – (Load Cells) No – (Weighing Element Original markings meet requirement)
II-2-W A service agency replaces a digital indicating element of a floor scale with the same	No	Yes – Indicating Element	Yes	Yes (Indicating)

S&T Agenda Item 310-3: Examples of Repaired Devices/Repaired Elements				
2002 NCWM Annual Report Agenda Item 310-2A from the Remanufactured Devices Task Force				
model indicator remanufactured by a firm other than the original manufacturer of the scale. NOTE: The remanufacturer made no design change to the indicator.		No – Weighing Element		Element only)
II-3-W A service agency completely disassembles a counter computing scale in their shop, checks for worn parts and replaces all worn parts (without replacing the load cell(s)) with remanufactured parts (not original manufacturer but no design change), replaces other parts as needed, cleans and reassembles the scale for sale.	Yes	Yes	Yes	Yes
II-4-W A device or element is sent back to the original equipment manufacturer. The device is disassembled, checked for wear, parts are replaced or fixed as necessary, and the device is reassembled and made to operate like a new scale of the same type.	Yes	No	Yes	No (Original markings meet requirement)
II-5-W A device or element is sent to a company (not the original manufacturer). The device is disassembled, checked for wear, parts are replaced with Original Equipment Manufacturer (OEM) parts or fixed as necessary, and the device or element is reassembled and made to operate like a new device or element of the same type.	Yes	No	Yes	Yes
Measuring Activity				
II-1-M Complete disassembly of a motor fuel dispenser, checking for worn parts, cleaning the dispenser and replacement of all badly worn parts with parts identical (same manufacturer, make, and model) to those removed.	Yes	No	Yes	Yes
II-2-M A service agency replaces a meter on site that cannot be brought into the proper calibration in a dispenser with the same model meter remanufactured by a firm other than the original manufacturer of the dispenser. NOTE: The remanufacturer made no design change.	No	Yes	Yes	Yes (Element only)
II-3-M A service agency replaces a meter mechanical indicating element with the same model mechanical indicating element remanufactured by a firm other than the original manufacturer of the mechanical indicating element. NOTE: The remanufacturer made no design change.	No	Yes	Yes	Yes (Element only)
II-4-M A device is sent back to the original equipment manufacturer. The device is disassembled, checked for wear, parts are replaced or fixed as necessary, and the device is reassembled and made to operate like a new device or element of the same type.	Yes	No	Yes	No (Original markings meet requirement)
II-5-M A company completely disassembles a motor fuel dispenser in their shop, checks for worn parts and replaces all worn elements with remanufactured elements (not original manufacturer but no design change), cleans and reinstalls the dispenser.	Yes	Yes	Yes	Yes
II-6-M A dispenser remanufacturer completely	Yes	Yes	Yes	Yes

S&T Agenda Item 310-3: Examples of Repaired Devices/Repaired Elements				
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disassembles a motor fuel dispenser, replaces a meter that cannot be brought into the proper calibration with the same model meter remanufactured by another firm, fixes and/or replaces all other parts as needed, reassembles the dispenser for sale as a remanufactured dispenser.				
II-7-M A company brings a motor fuel dispenser in their shop, fixes any leaks, replaces any meter which cannot be calibrated with a remanufactured meter which can be calibrated (not original manufacturer but no design change), replaces other non functioning parts with new, used, or repaired parts which function, cleans, installs new graphics, and sends the dispenser out for installation. NOTE: The remanufacturer made no design change.	No	Yes	Yes	Yes (Element only)
II-8-M A device is sent to a company (not the original manufacturer). The device is disassembled, checked for wear, parts are replaced with OEM parts or fixed as necessary, and the device is reassembled and made to operate like a new device of the same type.	Yes	No	Yes	Yes
Section III				
Examples of Remanufacturing/Repairs/Modifications that Constitute a Metrological Design Change or a Violation of NTEP Policy				
	Remanufactured Device	Remanufactured Element	Still Traceable to NTEP CC	Marking Required
Weighing Activity				
III-1-W A company disassembles a scale, cleans the scale and checks for worn parts, then replaces hydraulic load cells with shear beam load cells. NOTE: Requires different mounting due to different type of cells.	Not Applicable	Not Applicable	No	Yes*
III-2-W A metrological change to Original Equipment Manufacturer (OEM) design of a weighing device or element.	Not Applicable	Not Applicable	No	Yes*
III-3-W Structural modifications to weighbridges. Scale changes that do not comply with UR. 4.3. Scale Modification	Not Applicable	Not Applicable	No	Yes*
III-4-W Replacing a lever system with load cells.	Not Applicable	Not Applicable	No	Yes*
III-5-W Substitution of a load cell or cells in a scale when the replacement cells were not repaired or remanufactured by the original manufacturer or authorized agent of the original manufacturer. The remanufactured load cell(s) does not have an NTEP CC. (NTEP Policy, see NCWM Pub. 14)	Not Applicable	Not Applicable	No	Yes*
III-6-W A company completely disassembles a counter computing scale in their shop, checks for worn parts and replaces all worn parts with remanufactured parts (not the original manufacturer but no design change) and load cell without an NTEP CC, replaces other parts as needed, cleans and reassembles the scale.	Not Applicable	Not Applicable	No	Yes*
Measuring Activity				

S&T Agenda Item 310-3: Examples of Repaired Devices/Repaired Elements

2002 NCWM Annual Report Agenda Item 310-2A from the Remanufactured Devices Task Force

III-1-M A metrological change to the Original Equipment Manufacturer (OEM) design of a measuring device or element.	Not Applicable	Not Applicable	No	Yes*
III-2-M A dispenser remanufacturer adds temperature compensation to a dispenser, which was never approved for temperature compensation.	Not Applicable	Not Applicable	No	Yes*

*The Committee agreed that devices in Section III should be marked. The Task Force indicated that remanufactured marking requirements do not apply to Section III activities. The Committee noted that devices in Section III require the following:

- must be reevaluated
 - must be marked with new manufacturer’s identity
 - must be marked with new NTEP CC number
 - must meet paragraph G-S.1. Identification

The Committee agreed that it was historically important to include in the report the following NTEP Policies that are the basis for placing examples in Section III (activities that represent a metrological change or violation of current NTEP Policy).

III-1-W The 2000 edition of NCWM Pub 14 Weighing Devices Checklist for Load Cells Section A Program Description 5. Substitution of Metrologically Equivalent Load Cells in Scales states that metrologically equivalent load cells from the same or a different manufacturer may be substituted into a scale provided that the substituted load cells can be placed in the scale without any modification to the design of the load cell mounting assembly.

III-2-W The 2001 edition of NCWM Pub 14 Administrative Policy Section M. Policy on Remanufactured and Repaired Devices specifies that a device is no longer covered by an NTEP Certificate of Conformance if a company or individual makes changes to a device to the extent that the metrological characteristics are changed.

III-3-W Devices that fall under this activity are not covered by a CC unless the device complies NIST Handbook 44 paragraph UR.4.3. Scale Modification. Devices that meet UR.4.3. require approval by the weights and measures authority having jurisdiction over the device.

III-4-W The 2000 edition of NCWM Pub 14 Checklist for Digital Electronic Scales Section E. Modification of Type 1. Replacing the Lever System with Load Cells specifies that changing a scale from a lever system scale to a full electronic scale is considered a modification of type. The total replacement of any levers in a mechanical scale is a modification of type that is not covered by the original CC without additional testing.

III-5-W The 2000 edition of NCWM Pub 14 Weighing Devices Checklist for Load Cells Section A. Program Description 4. Repaired or Remanufactured Load Cells specifies that the original Certificate of Conformance (CC) no longer applies to a repaired load cell if that load cell is repaired by other than the original manufacturer or its authorized agent.

III-6-W The 2000 edition of NCWM Pub 14 Weighing Devices Checklist for Load Cells Section A. Program Description 5. Substitution of Metrologically Equivalent Load Cells in a Scale states that load cells from the same or a different manufacturer may be substituted into a scale provided that the load cells to be substituted have been evaluated separately and have a CC.

III-1-M NIST Handbook 130, Uniform National Type Evaluation Regulation Section 4. Prohibited Acts and Exemptions (9) Repaired Device and (10) Remanufactured Device and the 2001 edition of NCWM Pub 14 Administrative Policy Section M and the Checklist for Liquid-Measuring Devices Section K. Policy on Remanufactured and Repaired Devices specify that if a company or individual repairs or remanufactures a device, they are obligated to repair or remanufacture the device consistent with the manufacturer’s original design. Otherwise, that specific device is no longer traceable to the NTEP CC.

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III-2-M Handbook 130, Uniform National Type Evaluation Regulation Section 4. Prohibited Acts and Exemptions (9) Repaired Device and (10) Remanufactured Device and the 2001 edition of Pub 14 Administrative Policy Section J.2 Re-evaluation to Expand an Existing Certificate of Conformance. A type with a valid CC may be re-

S&T Agenda Item 310-3: HB 44 (2010) General and Scales Code List of Nonretroactive requirements.

Code Section	Nonretroactive paragraph	Effective Date	Subject	Comment
1.10	G-S.1.(b)(1)	2003	Identification - Model Identifier	Abbreviations for Model
1.10	G-S.1.(c)	1968	Serial number	Required
1.10	G-S.1.(c)(1)	1986	Serial number	Identified with words, symbols, etc.
1.10	G-S.1.(c)(2)	2001	Serial number	Acceptable abbreviations
1.10	G-S.1.(d)	2004	Software version	Must be identified
1.10	G-S.1.(d)(1)	2007	Software version	Identified with words, symbols, etc.
1.10	G-S.1.(d)(2)	2007	Software version	Acceptable abbreviations
1.10	G-S.1.(e)	2003	CC number	Identified with words, symbols, acceptable abbreviations, etc.
1.10	G-S.1.1.	2004	Locations of markings	Applicable to not-built-for-purpose devices
1.10	G-S.1.2.	2002	Remanufactured devices and elements	Markings
1.10	G-S.5.2.2.(d)	1986	Digital zero indications	Minimum zero indications
1.10	G-S.6.	1977	Operational control indications, etc.	Markings
1.10	G-S.8.	1990	Sealing electronic adjustable components	
1.10	G-S.8.1.	2010	Sealing multiple elements	
2.20	S.1.1.1.(b)	1993	Center of zero requirements	
2.20	S.1.2.	1986	Value of d	
2.20	S.1.2.1.	1989	Digital indicating scales single unit of measure	
2.20	S.1.4.3.	2002	Width of index for graduations	
2.20	S.1.7.(b)	1993	Capacity indication	Max 9d above capacity
2.20	S.1.8.3.1.	2001	Weight classifiers-sealing and indications	Applicable to weight classifiers and normal rounding scales capable of weight classifying
2.20	S.1.8.4. (a)(b) footnote	2006	# symbol	Prohibited
2.20	S.1.11.(a)	1979	Sealing	
2.20	S.1.11.(b)	1990	Sealing	Recognizes audit trail
2.20	S.1.11.(c)	1995	Sealing	Table S.1.11. format for audit trails
2.20	S.1.1.11. (table)	1995	Audit trail format	

Code Section	Nonretroactive paragraph	Effective Date	Subject	Comment
2.20	S.1.12.	1993	Manual weights	Requirements and abbreviations for manual weights
2.20	S.1.12.	1995	Manual weights	Net weights permitted
2.20	S.2.1.3.	???	Automatic zero-tracking	Mfg. before and after dates in lieu of nonretroactive dates (applicable to remanufactured devices?)
2.20	S.2.1.3.3.	2001	Means to disable AZT	
2.20	S.2.1.5.(c)	2009	IZSM	Requirements and limits for IZSM on separable indicating elements
2.20	S.2.2.2.	1989	Equal arm scales	Balance indicator requirements
2.20	S.2.3.	1983	Tare	Nonretroactive requirements for clearing of tare and for MI & MR scales.
2.20	S.2.4.	1986	Level-indicating means	Retroactive exemption for jewelers, prescription, and dairy test scales including Class I and II scales.
2.20	S.5.1.	1986	Accuracy Class Markings	
2.20	S.5.2.	1986	Parameters for Accuracy Classes	
2.20	S.5.4.	1994	Relationship of v and e	Suitability of load cell vmin
2.20	Table 3	1986	Parameters for Accuracy Classes	Table
2.20	S.6.1.	1989	CLC marking requirements	
2.20	S.6.4.	2002	RR track scale section capacity	Limitations of capacity of 2-section and more that 2-section scales
2.20	S.6.5.	2003	Livestock scales	Limitations of capacity of 2-section and more that 2-section scales
2.20	S.6.3.(b)1	2003	Model designation	Allowable prefixes
2.20	S.6.3.(b)2	1968	Serial number	Required
2.20	S.6.3.(b)2	1986	Serial number	Allowable prefixes
2.20	S.6.3.(b)3	1983	Nominal Capacity	Nonretroactive requirement for value of the scale division
2.20	S.6.3.(b)4	1986	d and e	Markings
2.20	S.6.3.(b)5	1986	Temperature ranges	Marking if required
2.20	S.6.3.(b)6	1988	nmax for load cells	Includes acceptable abbreviation.
2.20	S.6.3.(b)7	1988	Single and Multiple load cell	Markings
2.20	S.6.3.(b)8	1988	Separable indicating element	Marking Included III/III L
2.20	S.6.3.(b)9	1989	CLC marking requirements	Includes modified scales
2.20	S.6.3.(b)11	1991	Load cell markings	Permits accompanying document
2.20	S.6.3.(b)12	1989	CLC marking requirements	Acceptable abbreviation
2.20	S.6.3.(b)13	1986	Marking for special application	In additions to existing retroactive counting feature requirements
2.20	S.6.3.(b)14	2003	CLC marking requirements	Added for livestock scales that also weigh vehicles
2.20	S.6.3.(b)15	1988	Loading direction for load cells	Markings
2.20	S.6.3.(b)16	1986	Serial number markings	Includes prefix

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Appendix B – Attachments

Code Section	Nonretroactive paragraph	Effective Date	Subject	Comment
2.20	S.6.3.(b)17	1986	Accuracy class marking requirements	
2.20	S.6.3.(b)18 (e)	1989	Included load-receiving elements	Nominal capacity marking
2.20	S.6.3.(b)19	1988	nmax, vmin, accuracy class markings	Applicable to separable weighing-load-receiving elements
2.20	S.6.3.(b)20	2000	CLC requirements for combination RRtrack/Vehicle scales	Markings
2.20	S.6.3.(b)21	2001	vmin in terms of mass	
2.20	S.6.3.(b)22	2003	CLC and section capacity markings	Applicable to combination RR track and vehicle scales
2.20	S.6.3.(b)23	2001	CC marking requirement	refers to G-S.1.(e)
2.20	S.6.3.(b)24	2005	Acceptable abbreviations for "Section Capacity."	
2.20	N.1.5.	1986	Discrimination test	
2.20	N.1.4.2.	1991?	CIM railroad weighing systems < ten cars	"In-service before" in lieu of nonretroactive dates (applicable of remanufactured devices?)
2.20	N.1.4.3.	1991?	CIM railroad weighing systems < ten cars	"In-service after" in lieu of nonretroactive dates (applicable of remanufactured devices?)
2.20	T.N.1.	1986	Tolerance for marked scales	Applicable to remanufactures scales (e.g., T.N.4.5., T.N.4.6., T.N.4.7., T.N.7., T.N.8.,)
2.20	UR.1.3.	1986	Value of scale division	Recorded value same as indicated value.
2.20	UR.1.5.	1996	RR track scale printer requirement.	
2.20	UR.2.6.1.	1976	Approaches	
3.30	S.1.5.3.(a)	2002	Width of index for graduations	
3.30	S.1.6.1.	2006	Indications of delivery for electronic devices	Quantity and total price inhibited until fueling conditions reached.
3.30	S.1.6.2.	1983	Power loss provisions	Transaction and user information retention requirements
3.30	S.1.6.4.1.(b)	1991	Display of Unit Prices	Selected UP displayed prior to delivery with exceptions (e.g., fleet, contract, and truck refueling sales).
3.30	S.1.6.5.(a)	1991	Money-Value computations	Device shall compute (and display?) all possible sales within range of measurement or computing elements (i.e., with exceptions to fleet, contract, truck-stop dispensers)
3.30	S.1.6.5.3.	1985	Auxiliary element money indications	Agreement requirements with primary indications
3.30	S.1.6.5.4.	1991	Selection on unit price	Requires selection of UP prior to delivery using device or other customer activated controls with exceptions (e.g., fleet, contract, and truck refueling sales).
3.30	S.1.6.5.5.	1994	Retention of quantity and total price	Indications on the face of the dispenser retained for a minimum of 5-minutes or until new transaction initiated. Exception for aviation refueling.

Code Section	Nonretroactive paragraph	Effective Date	Subject	Comment
3.30	S.1.6.5.6.(a)	2008	Quantity and total price - Aviation refueling	Quantity displayed through the transaction.
3.30	S.1.6.5.6.(b)	2008	Total price display	Conditions for displaying total price
3.30	S.1.6.5.6.(c)	2008	Retention of quantity and total price	Indications retained for a minimum of 5-minutes or until new transaction initiated.
3.30	S.1.6.5.6.(d)	2008	Printed receipt	Shall be available & include TP, UP, and quantity.
3.30	S.1.6.6. (b)	1998	Agreement between indications	Primary and auxiliary indicated or recording elements meet formula (quantity x UP = TP to nearest 1 cent)
3.30	S.1.6.7.	1986	Recorded representations (receipt)	Receipt requirements for POS and card (debit/credit) or cash activated devices with exceptions to fleet and contract sales.
3.30	S.2.2.	1995	Provisions for sealing	Table S.2.2. format for audit trails
3.30	S.2.2. Table	1996	Methods for sealing Cat. 2 devices	Hardware on-site, scales with adequate event counters or physical seal and requirements for the location of event counters.
3.30	S.2.2. Table	2001	Cat. 3 devices	Indication, operation, and recorded representations during remote configuration.
3.30	S.2.6.	1985	Temp. determinations (wholesale)	Requirements for thermometer well and its location.
3.30	S.4.4.1.	1985	Retail devices (discharge rate)	Discharge rate marking requirements.
3.30	S.4.4.2.	2003	Retail devices (location - G-S.1. Info)	Height range, internal/external access, and permanent part of device,
3.30	S.5.	1995	Retail devices (totalizers)	Requirements.
3.30	T.4.	1988	ATC - differences in meter error	Based on results of determined with and without ATC activated.

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Appendix C – Correspondences

S&T Agenda Item 310-3: Letter from PMP

Letter from Mr. Thomas McGee, President, PMP Corporation, submitted to the 2010 NCWM Annual Meeting

PMP CORPORATION
Petroleum Meter & Pump

May 4, 2010

Steve Giguere
Maine Department of Agriculture State House Station 28 Augusta, ME 04333

Dear Steve,

The National conference on Weights and Measures has on its agenda for 2010 a voting item which could have a dramatic effect on the Remanufacturing Industry and on low volume retail fuel outlets. Item 310-4 (See Supplement I) was proposed at the 2009 WNMA and SWMA Regional Meetings but was originally submitted by the NIST office of Weights and Measures. It was based on an inquiry NIST received from a State Director, asking if the Nonretroactive Requirements apply to Remanufactured Devices. It is stated that the change is needed to clarify the application of intent for the Nonretroactive Clause in Handbook 44, G-A.6.

To say that this change is just a clarification is an understatement. It changes the overall interpretation and scope of the Nonretroactive requirement. The change will add requirements to remanufactured devices that were added to the Handbook after the device was originally manufactured. It ultimately could eliminate or severely impact the practice and business of Remanufacturing and of low volume retail fuel outlets.

If you review G-A.6 as it currently reads in the 2010 version of Handbook 44, Nonretroactive Requirements apply to New Devices based on the "Original Manufacturing Date" compared to effective date of a requirement. Adding "Remanufactured" to the requirement will establish a new point in time (Remanufactured Date) to apply requirements. So in short a device originally manufactured in January of 2002 and remanufactured January of 2007 would need to meet all nonretroactive requirements added to the handbook up to and including January of 2007.

A good example of this would be if a Tokheim 1200 series dispenser was removed from the island and remanufactured. Let say the dispenser was disassembled checked for wear and a new mechanical computer and new outer skins were installed. The dispenser was checked for accuracy and everything checked out per handbook 44. Because this dispenser was out of production prior to the adding of the nonretroactive marking requirement specifying that the CC number be clearly marked on the dispenser, it could be rejected by a state and not allowed to be installed. These dispensers are very accurate, and proven to be very reliable and especially suitable for low volume retail outlets in rural areas. There is a vast difference in the cost per gallon for equipment that is passed on to the consumer from a retail location that sells 250,000 gallons per month versus the location that sells 30,000 gallons per month. The same issues apply to scales such as a deli scale that is removed from one grocery store location to the store's shop where it is rebuilt and moved to another grocery store.

S&T Agenda Item 310-3: Letter from PMP

Letter from Mr. Thomas McGee, President, PMP Corporation, submitted to the 2010 NCWM Annual Meeting

As stated in the discussion of the item NIST wants to make a direct comparison between a new device and a remanufactured device indicating they directly compete with each other. This is true as far as competing in the same market as a whole but not if you factor in technology, features, warranty, etc. Some time back the Remanufactured Task Force recognized that Remanufacturing has been going on for a long time and is just part of the business. The remanufactured devices do not directly compete with new devices but they do fill a void. A smaller low volume operation can buy remanufactured devices at a reduced price which keeps them competitive with the large volume operations. It provides a means to extend the life of equipment that maybe has gone out of production but is still very accurate and reliable.

NIST has also stated they do not want to reopen the whole remanufactured discussion. However to fully understand the ramification of the change and to determine if the change is even needed, one has to go back and review the current handbook requirements, and definitions for remanufactured devices and repaired devices. Simply said there are very subtle differences between the definitions of repaired and remanufactured. More importantly, the handbook under the nonretroactive requirements already defines application for "used" devices which includes remanufactured devices.

This item should be moved back to an informational item or removed for the agenda. If made informational it would give all of those companies that could be impacted by the change to review and comment on this issue. This is not just a clarification. It is clearly a change in the philosophy of applying Nonretroactive Requirements.

Please feel free to contact me at 1 (800) 243-6628 if you have any questions or need further information.

Sincerely,

Thomas McGee
President

S&T Agenda Item 310-3: Stakeholders Letter from Graffco

Letter from Mr. Dan Graff, President, Graffco Inc., submitted to the 2010 NCWM Annual Meeting

July 2, 2010

Tina G. Butcher (NIST Tech Advisor)
NIST, Weights & Measures Division
100 Bureau Drive, MS 2600
Gaithersburg, MD 20899-2600

Ms. Butcher:

We write to you as stakeholders in the community that works to recondition-or, as coined in Handbook 44, "remanufacture" - used gas pumps for sale in the United States. It has come to our attention that a provision currently viewed as a "technical correction" is proposed as a voting item at the National Conference of Weights and Measures in July; the item is 310-4 of the 2010 Publication 15, entitled "Nonretroactive Requirements (Remanufactured Equipment)." This "correction," however, could have a major and lasting impact on the market for reconditioned or remanufactured gas pumps and has not been adequately discussed by the Weights and Measures community or by the remanufacturing community.

This letter is to urge you to support moving the 310-4 G-A6 amendment from "voting" to an "informational item," so that a task force, like the Remanufacturing Task Force formed in the early 2000s, can adequately discuss the ramifications of the change and the resulting impact on the process of reconditioning gas pumps.

We realize that there has been continued debate on how exactly to treat reconditioned or remanufactured gas pumps, and the need for conformity throughout the Weights and Measures community. This item, 310-4, however, is likely to exacerbate the problem and lead to further confusion in the remanufacturing community on the appropriate procedure for compliance with Handbook 44. For this reason, both the Northeast Weights and Measures Association and the Central Weights and Measures Association have recommended that the item be moved to "informational" status at the National conference.

For the last decade, "gas pump remanufacturers," equipment distributors, oil companies, and convenience store operators have been reconditioning gas pumps to meet the specifications of the original Certificate of Compliance (CC). The proposal for revised language in 310-4, however, could be interpreted as requiring these reconditioned gas pumps (and possibly even gas pumps repaired on site, but taken off the island) to be treated as if they were newly manufactured gas pumps. This change would drastically increase the costs associated with reconditioning used gas pumps, and potentially ending the practice in the industry, leaving only new gas pumps available in an already depressed market and used pumps sitting as potential hazards in local landfills.

This change would not only harm those that recondition gas pumps, but also the industries that rely on selling used gas pumps, or retailers that seek access to reconditioned pumps as a way to reduce costs in an economically strained market. This letter has been signed by stakeholders with the hope that this issue can be better discussed if there is no change in July. Item 310-4 needs to remain an informational item.

We appreciate all the work that you do on behalf of the Weights and Measures community and look forward to continued discussion on this topic. Please feel free to contact any of us with questions regarding our position on Item 310-4.

Sincerely,

GRAFFCO, INC.
Dan Graff President
13957 Lake Drive Forest Lake,
MN 55025

651-464-1079

S&T Agenda Item 310-3: Stakeholders Letter from Graffco

Letter from Mr. Dan Graff, President, Graffco Inc., submitted to the 2010 NCWM Annual Meeting

Letter from Remanufacturing Stakeholders July 2, 2010
 Page 2

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S&T Agenda Item 310-3: Stakeholders Letter from Graffco

Letter from Mr. Dan Graff, President, Graffco Inc., submitted to the 2010 NCWM Annual Meeting

Letter from Remanufacturing Stakeholders July 2, 2010

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Letter from Remanufacturing Stakeholders July 2, 2010

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S&T Agenda Item 310-3: Letter from Dresser Wayne

Letter from Mr. R. Michael Carlson President, Dresser Wayne North America Dresser, Inc., submitted to the 2010 NCWM Annual Meeting

DRESSER Wayne

July 7, 2010
Executive Secretary
National Conference on Weights and Measures
National Institute of Standards and Technology 100 Bureau Drive, Stop 2600
Gaithersburg, MD 20899-2600

ATTN: Specifications and Tolerances Committee

RE: Item 310-4. G-A.6. Nonretroactive Requirements (Remanufactured Equipment)

Dear Mr. Saum and the Specifications and Tolerances Committee:

As one of the leading manufacturers of fuel dispensers in the United States, Dresser Wayne takes great care in providing products in which fuel retailers can place their confidence and can rest assured that their equipment will be safe for and fair to the general public. To that end, we put considerable effort into maintaining Certificates of Conformance for each of our dispensers to ensure that they meet all current NTEP requirements. Dresser Wayne understands that changes to the NTEP standards are not arbitrary: they are put into place to meet the changing needs of the marketplace and to help protect consumers and retailers alike.

Under ordinary circumstances, retailers replace their fuel dispensers with new equipment at the end of the normal lifecycle, a practice that helps ensure that their dispensers always meet the most current standards. However, there is a growing trend to extend that lifecycle by refurbishing or "remanufacturing" the equipment after its removal from the original site, and then placing it back into the stream of commerce without first bringing it into compliance with current NTEP standards. This failure to meet applicable NTEP certification standards increases the chances of errors, misuse, and fraud, and puts consumers as well as station owners at risk.

The purpose of the NTEP standards is to promulgate consistency and fairness in the dispensing of fuel to the public. Dresser Wayne believes that those standards should apply equally to every company selling fuel dispensers, whether the equipment is new, used or remanufactured. The current practice of extending the usable life of fuel dispensers without a system of checks and balances to help ensure that, at the time of sale, such used and remanufactured equipment meets current NTEP standards results in inconsistency in the marketplace, and an unacceptable risk of error. All dispenser suppliers should have an obligation to help keep the public protected, and to see to it that customers at the pump are getting exactly what they pay for.

The consistency and accuracy of fuel-dispensing equipment is an issue of critical and growing importance. For decades the industry has been able to safely and reliably operate within a fueling and payment infrastructure that remained relatively stable. However, the last few years have brought significant changes to the marketplace including:

- **Payment security.** Higher fuel prices and sophisticated identity-theft schemes both have exposed dispensing equipment to increasing threats of fraud - manifested by the theft of fuel as well as customers' personal and financial data. As such, the credit card industry has mandated increasingly rigorous payment-security standards, and dispenser manufacturers have enhanced fuel-meter technology and associated electronics to deter tampering with measurement and calibration.
- **Fuel evolution.** The last few years have brought unprecedented changes in the country's fuel supply based on national energy policy and environmental initiatives. The introduction of ultra-low-sulfur diesel

S&T Agenda Item 310-3: Letter from Dresser Wayne

Letter from Mr. R. Michael Carlson President, Dresser Wayne North America Dresser, Inc., submitted to the 2010 NCWM Annual Meeting

(ULSD) and diesel exhaust fluid (DEF) have taxed the capabilities of dispensers' hydraulic systems. In addition, higher levels of ethanol in today's fuels require specially fabricated seals and components. Manufacturers must adapt quickly and skillfully to these changes, not only to meet environmental standards, but also to maintain the integrity of the metrological function.

- **Communications interface.** Although current dispenser communications are via serial interface, the recent introduction of Ethernet communication to the forecourt portends both the download of dispenser software from remote sources as well as the potential for automatic meter-calibration based on real-time statistical reconciliation. These emerging technological advances may well require updated sealing methods and robust audit requirements achievable only with adherence to the latest industry standards.

It is critical that such developments in a rapidly evolving industry be built upon an infrastructure that does not compromise when it comes to fairness. As such, Dresser Wayne supports maintaining item 301-4 G-A.6 as a voting item at the National Conference of Weights and Measures on July 11-15, 2010. It is in the best interest of the general public, station owners and the fuel-dispensing industry in general.

Sincerely,



R. Michael Carlson
President, Dresser Wayne North America
Dresser, Inc.

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S&T Agenda Item 321-1: Belt-Conveyor Scale Systems - Letter from Thermo Fisher Scientific

Letter Thermo Fisher Scientific, submitted to the 2010 NCWM Annual Meeting S&T Agenda Item 321-1



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Memo to:
National Conference on Weights and Measures
Specifications and Tolerances Committee

20 June 2010

A sub-committee of the Belt Conveyor Scale Working Group has held conference calls on over the past several months to discuss NCWM informational item 321-1 regarding the consistency of the conveyor belt.

The existing wording in HB-44 is:

N.3.1.3. Check for Consistency of the Conveyor Belt Along Its Entire Length. – After a zero load test with flow rate filtering disabled, the totalizer shall not change more than plus or minus (+/- 3d) 3.0 scale divisions from its initial indication during one complete revolution.

The current proposal (321-1) reads:

N.3.1.3. Check for Consistency of the Conveyor Belt Along Its Entire Length. – During a zero-load test, the total change indicated in the totalizer during one revolution of the belt shall not exceed 0.18% of the load that would be totalized at scale capacity for the duration of the test. The end value of the zero-load test must meet the +/-0.06% requirement of paragraphs N.3.1.2. Initial Stable Zero and N.3.1.3 Test for Zero Stability.

The sub-committee has agreed that the final proposal must include reference to disabling the flow rate filtering (low flow cutoff, dead band, flow rate damping, etc.). The committee also has agreed that the allowable error should be based on the maximum load that can be delivered in one revolution of the belt operated at maximum capacity. The effects of significant variations in the belt carcass could affect the delivered load if the delivered load requires less than complete revolutions of the belt (it is uncommon for a load to be equal to an exact belt revolution or multiples thereof). The committee has also agreed that the allowable error should be expressed in percentage, not in scale divisions. We have also noted that it is not necessary to refer to a different paragraph in the handbook, as each section should be capable of being enforced individually.

In order to determine the current % of belt consistency variance, the team has distributed a brief survey to several manufacturers and scale service companies to obtain data on current installations, both commercial and non-commercial use. Use of current conditions in the majority of installations will be used to establish the final proposed allowable consistency variance.

While not yet fully defined, the committee's version of the revised proposal will be similar to:

N.3.1.4.3. Check for Consistency of the Conveyor Belt Along Its Entire Length. – Prior to performing a materials test, the consistency of the conveyor belt shall verified as follows:

- a. Flow rate filtering and no flow cut-off shall be disabled.
- b. The belt shall be marked in order to verify one complete revolution.
- c. Run the empty belt.
- d. The total variance in weight accumulation during one complete revolution of the belt shall not exceed x% (tbd) of the load delivered when operated at maximum capacity for one revolution of the belt.
(example: If the capacity is 2500 TPH and 1 belt revolution takes = 260 seconds, the load delivered in one

S&T Agenda Item 321-1: Belt-Conveyor Scale Systems - Letter from Thermo Fisher Scientific

Letter Thermo Fisher Scientific, submitted to the 2010 NCWM Annual Meeting S&T Agenda Item 321-1
revolution at maximum capacity = 180.55 Tons. The total variance of < 0.12% (total +/- accumulation) cannot exceed 0.216 tons.)

Based on the progress of the sub-committee, and the pending receipt of actual field information as it relates to belt consistency, the sub-committee of the National Belt Conveyor Scale Working Group requests the National S&T committee to consider moving the Belt Consistency proposal from informational to developing. The sub-committee expects to have data ready for the fall 2010 regional conferences, or if data is slow in being provided, by the NCWM interim meeting in January, 2011.

Respectfully submitted,

Bill Ripka – sub-committee lead

Sub-Committee Members:

Peter Sirrico – Thayer Scale

Phil Carpentier – PTC Consulting

Al Page – independent

James Hale – Southern Company Services

John Barton – NIST

Rick Harshman – NIST

Jim Dietrich – Kaskaskia Valley Scale