Grain Analyzer Sector Summary

August 20-21, 2014 / Kansas City, Missouri

INTRODUCTION

The charge of the NTETC Grain Analyzer Sector is important in providing appropriate type evaluation criteria based on specifications, tolerances and technical requirements of *NIST Handbook 44* Sections 1.10. General Code, 5.56. Grain Moisture Meters and 5.57. Near-Infrared Grain Analyzers. The sector's recommendations are presented to the National Type Evaluation Program (NTEP) Committee each January for approval and inclusion in *NCWM Publication 14 Technical Policy, Checklists, and Test Procedures* for national type evaluation.

The sector is also called upon occasionally for technical expertise in addressing difficult *NIST Handbook 44* issues on the agenda of National Conference on Weights and Measures (NCWM) Specifications and Tolerances (S&T) Committee. Sector membership includes industry, NTEP laboratory representatives, technical advisors, and the NTEP Administrator. Meetings are held annually, or as needed and are open to all NCWM members and other registered parties.

Suggested revisions 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***.

Table A
Table of Contents

Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
BIML	International Bureau of Legal Metrology	NTETC	National Type Evaluation Technical

			Committee
CD	Committee Draft	OCP	Ongoing Calibration Program
CIML	International Committee of Legal Metrology	OIML	International Organization of Legal Metrology
CIPM	International Committee of Weights and Measures	OWM	Office of Weights and Measures
D	Document	R	Recommendation
EMRP	European Metrology Research Program	S&T	Specifications and Tolerances
FGIS	Federal Grain Inspection Service	SC	Subcommittee
GA	Grain Analyzer	SD	Secure Digital
GIPSA	Grain Inspection, Packers and Stockyards Administration	TC	Technical Committee
GMM	Grain Moisture Meter	TW	Test Weight
MRA	Mutual Recognition Agreement	UGMA	Unified Grain Moisture Algorithm
NCWM	National Conference on Weights and Measures	USB	Universal Serial Bus
NIR	Near Infrared Grain Analyzer	USDA	United States Department of Agriculture
NIST	National Institute of Standards and Technology	USNWG	United States National Working Group
NTEP	National Type Evaluation Program		

Details of All Items
(In order by Reference Key)

1. Selecting a new NTETC GA Chairperson

Cassie Eigenmann, the NTETC GA Chair notified the GA Sector on January 24, 2014 that she was retiring from her position as Analytical Laboratory Manager at the DICKEY-john Corporation effective February 4, 2014 and therefore would resign from her position as Chair of the NTETC GA Sector. In her January 24, 2014 e-mail notification, Ms. Eigenmann also informed the GA Sector that NCWM requested that she poll the Sector members for possible candidates to fill the NTETC GA Chair position. One nomination for Sector Chairperson was received for Karl Cunningham of Illinois Weights and Measures. Additional nominations may be made during the meeting.

Ms. Eigenmann held the position of NTETC GA Sector Chair for over 10 years. Her facilitation of the Sector discussions over the years has helped the Sector with numerous proposals and recommendations for changes to NCWM Publications 14 and NIST HB 44. We wish her well in her future endeavors.

In accordance with the NTEP Administrative policies there is no fixed term for the NTETC GA Chair position, the Sector Chair must be a member of NCWM, and the Sector Chair is appointed by the NTEP committee Chair.

A new GA Sector Chair will be selected at the August 2014 NTETC Sector Meeting.

Cassie Eigenmann attended the August 2014 NTETC meeting and performed the duties of the Sector Chairman. Ms. Eigenmann informed the Sector that after polling the Sector she received one nomination, Karl Cunningham of Illinois, for the position of the Grain Analyzer Sector Chair. A question was raised as to whether or not travel would be a concern for Mr. Cunningham. Mr. Cunningham responded that travel would not be a concern. Ms. Eigenmann asked if there were any additional nominations. No additional nominations were made and the sector voted unanimously for Karl Cunningham as the new Grain Analyzer Sector chairman.

2. Report on the 2013 NCWM Interim and Annual Meetings

The 2014 NCWM Interim Meeting was held January 19-22 in Albuquerque, New Mexico. At that meeting, no recommended amendments to Publication 14 for grain analyzers were provided to the NTEP committee.

The 2014 NCWM Annual Meeting was held July 13-17, 2014 in Detroit, Michigan. There were no Grain Analyzer Sector Voting Items on the agenda. There was one Grain Analyzer Sector Developing item on the S&T agenda, **Item 360-7, Appendix D – Definitions: Remote Configuration Capability.** See Grain Analyzer Agenda Item 5, below, for details.

Mr. Jim Truex, NTEP Administrator, provide an update on the Interim and Annual Meetings. He reported that there was good representation at the 2014 interim and annual meetings compared to other years and that the NTEP Committee accepted the Grain Analyzer Sector's recommended changes to NCWM Publication 14 as reported in the 2013 Grain Analyzer Sector Summary.

3. Report on NTEP Evaluations and Ongoing Calibration Program (OCP) (Phase II) Testing

Cathy Brenner and Mr. Rick Dempster, Grain Inspection, Packers and Stockyards Administration (GIPSA), the NTEP Participating Laboratory for grain analyzers, brought the sector up-to-date on NTEP Evaluation (Phase I) activity. They also reported on the collection and analysis of Grain Moisture Meter OCP (Phase II) data on the 2013 crop and identified the models enrolled in Phase II for the 2014 harvest. For the 2014 harvest 7 models are enrolled in Phase II this year. The manufacturers will be charged on the basis of 6 models because, by using GAC2500-UGMA data, DICKEY-john can automatically back calculate calibrations to the GAC2500 without having to run samples on the GAC2500*.

The 7 models:

1. Bruins Instruments - OmegAnalyzerG
2. DICKEY-john Corp. - GAC2000 (NTEP Version), GAC2100a and GAC2100b2100
3. DICKEY-john Corp. - GAC2500 (*See note above. Will not run samples on this model.)
4. DICKEY-john Corp. - GAC2500-UGMA
5. Foss North America - Infratec 1241
6. Perten Instruments Inc. - 9500, AM5200 and AM5200-A (The AM5200-A is UGMA Certified.)
7. The Steinlite Corporation - SL95

4. Review of OCP (Phase II) Performance Data

At the sector's August 2005 meeting it was agreed that comparative OCP data identifying the Official Meter and listing the average bias for each NTEP meter type should be available for annual review by the sector. Accordingly, Ms. Brenner, GIPSA, the NTEP Participating Laboratory for Grain analyzers presented data showing the performance of NTEP meters compared to the air oven. This data is based on the last three crop years (2011–2013) using calibrations updated for use during the 2014 harvest season. The 2011-2013 Grain Moisture Meter (GMM) Phase II comparison graphs are available for view or can be downloaded for printing at the following web address:

http://www.ncwm.net/resources/dyn/files/1235447z287194bf/_fn/GMMBiases14.pdf

At the August 2014 Grain Analyzer Sector meeting, the NTEP laboratory reported the following information concerning the 15 NTEP grains for the 2013 crop year:

- The grains collected were from late harvested grains.
- Due to the government shut down, sample maintenance was performed during the current year.

5. Modify the Definition of Remote Configuration Capability Appearing in Appendix D of NIST Handbook 44 to Recognize the Expanded Scope of "Remote Configuration Capability" (S&T Developing item 360-7)

Source:
NTETC Grain Analyzer Sector

Purpose:
Table S.2.5. *Categories of Device and Methods of Sealing* that appears in §5.56.(a) of *NIST Handbook 44* lists acceptable methods of sealing for various categories of GMMs. When the sector first recommended adding the table to *NIST Handbook 44* at their September 1996 meeting, the concept of making a change to a GMM from a remote site involved information " …sent by to the device by modem (or computer)." In 2011 this concept has expanded to include the ability of the measuring device to accept new or revised sealable parameters from a memory chip (e.g., an SD Memory Card that may or may not itself be necessary to the operation of the device), external computer, network, or other device plugged into a mating port (e.g., Universal Serial Bus (USB) port) on the measuring device or connected wirelessly to the measuring device. The changes proposed in Item under Consideration expand the scope of "remote configuration capability" to cover instances where the "other device" may be necessary to the operation of the weighing or measuring device or which may be considered a permanent part of that device.

Item under Consideration:

remote configuration capability. – The ability to adjust a weighing or measuring device or change its sealable parameters from or through some other device that ~~**is not**~~ **may or may not** itself **be** necessary to the operation of the weighing or measuring device or ~~**is not**~~ **may or may not be** a permanent part of that device.[2.20, 2.21, 2.24, 3.30, 3.37, 5.56(a)]

(Added 1993, **Amended 20XX**)

Background / Discussion:
Two common types of removable data storage devices are the USB flash drive and the Secure Digital (SD) memory card. A USB flash drive is a data storage device that includes flash memory with an integrated USB interface. USB flash drives are typically removable and rewritable, and physically much smaller than a floppy disk. A SD card is a non-volatile memory card format originally designed for use in portable devices. The SD standard is maintained by the SD Card Association.

Removable digital storage devices can be used in GMMs as either "data transfer" devices which are not necessary to the operation of the GMM or as "data storage devices" which are necessary to the operation of the GMM.

A USB flash drive is most likely to be used as a "data transfer" device. In a typical "data transfer" application, the USB flash drive is first connected to a computer with access to the web. The computer visits the GMM manufacturer's web site and downloads the latest grain calibrations that are then stored in the USB flash drive. The USB flash drive is removed from the computer and plugged into a USB port on the GMM. The GMM is put into "remote configuration" mode to copy the new grain calibration data into the GMM's internal memory. When the GMM has been returned to normal operating (measuring) mode the USB flash drive can be removed from the GMM.

Although an SD memory card could also be used as a "data transfer device" it is more likely to be used as a "data storage device". In a typical "data storage device" application, the SD memory card stores the grain calibrations used on the GMM. The SD memory card must be plugged into an SD memory card connector on a GMM circuit card for the GMM to operate in measuring mode. To install new grain calibrations the GMM must be turned "off" or put into a mode in which the SD memory card can be safely removed. The SD memory card can either be replaced with an SD memory card that has been programmed with the new grain calibrations or the original SD memory card can be re-programmed with the new grain calibrations in much the same way as that described in the

preceding paragraph to copy new grain calibrations into a USB flash drive. In either case, the SD memory card containing the new calibrations must be installed in the GMM for the GMM to operate in measuring mode. In that regard, the SD memory card can be considered a "permanent part" of the GMM in that the GMM cannot operate without it.

Note: In the above example "SD memory card" could be any removable flash memory card such as the Secure Digital Standard-Capacity, the Secure Digital High-Capacity, the Secure Digital Extended-Capacity, and the Secure Digital Input/Output, which combines input/output functions with data storage. These come in three form factors: the original size, the "mini" size, and the "micro" size. "Memory Stick" is a removable flash memory card format, launched by Sony in 1998, and is also used in general to describe the whole family of Memory Sticks. In addition to the original Memory Stick, this family includes the Memory Stick PRO, the Memory Stick Duo, the Memory Stick PRO Duo, the Memory Stick Micro, and the Memory Stick PRO-HG.

At its 2012 meeting the Grain analyzer Sector agreed by consensus to accept the Item under Consideration and recommended forwarding this item to the S&T Committee for consideration.

2012 WWMA Annual Meeting: Ms. Juana Williams (NIST OWM) supported the intent. She talked about this item in conjunction with Item 356-1, S.2.5. Categories of Device and Methods of Sealing. This is a complex item affecting multiple other devices; therefore the proposal requires further consideration. The language in the proposal to amend the definition of remote configuration capability is confusing. The Committee believes the current definition already allows the use of remote configuration devices and allows the flexibility desired. The ramifications of changing the definition could affect other devices in HB 44. WWMA did not forward this item to NCWM.

2012 SWMA Annual Meeting: There were no comments. After reviewing the proposal and considering the potential impact on other device types, the Committee recommended this as a Developing Item. The Committee asks that the Sector continue to obtain input on the definition and the impact the changes would have on other device types. SWMA forwarded the item to NCWM, recommending it as a Developing Item and assigning its development to the Grain Analyzer Sector.

During its Open Hearings at the 2013 NCWM Interim Meeting, the Committee heard comments from Ms. Juana Williams (NIST OWM). OWM suggests the Committee consider this item as a Developing item to allow other Sectors to discuss how a change to the definition may affect other device types of similar design and to consider changes if needed. OWM recognizes that the current definition for "remote configuration capability" may <u>not</u> address those grain moisture meters (GMMs) which can only be operated with a removable data storage device, containing, among other things, the grain calibrations intended for use with the GMM, inserted in the device (as was described by the Grain Analyzer Sector). As such, OWM notes that current sealing requirements were developed at a time when such technology likely didn't exist, nor could be envisioned, and are based on the current definition of remote configuration capability. Because the current definition was never intended to apply to this "next generation" technology, OWM suggests that those charged with further development of this item may wish to revisit the five philosophies of sealing and consider whether a new paragraph, completely separate from current sealing requirements, might be appropriate and a better option, than the one currently proposed. The five philosophies of sealing are included in the 1992 Report of the 77th National Conference on Weights and Measures (Report of the Specifications and Tolerances Committee). Another option, preferred over the changes currently proposed, would be to add a separate statement to the current definition of "remote configuration capability" to address removable storage devices. For example, the following sentence might be considered as an addition to the current definition for "remote configuration capability:"

> **<u>Devices which are programmed using removable media (such as SD cards, flash drives, etc.) that may or may not be required to remain with the device during normal operation are also considered to be remotely configured devices.</u>**

The Committee also heard comments from Dmitri Karimov (LC), speaking on behalf of the MMA, who made two points: (1) Flow computers may already have these capabilities, thus it may be more appropriate to consider adding requirements to the General Code so that the requirements will be uniformly applied to all device types; and (2) the

Committee should look ahead and consider other capabilities that may or already have emerged such as wireless communication and configuration.

The Committee acknowledged the comments indicating that the current definition of "remote configuration capability" was developed at a time when certain technologies, such as blue tooth, SD storage devices, flash drives, etc., didn't exist. The Committee recognized that it may be difficult to modify the existing definition and associated requirements to be flexible enough to address emerging and future technologies without having a significant (and possibly detrimental impact) on existing devices. Consequently, rather than modifying the current definition, the Committee concluded that a better approach might be to develop an entirely separate set of security requirements that would apply to emerging technologies. The Committee believes that additional work is needed to develop proposed definition(s) and associated requirements and decided to designate the item as Developmental. The Committee requests other Sectors review the Grain Sector's proposed modification to the definition as well as OWM's suggestions and provide input.

At their 2013 Annual Meetings, both NEWMA and CWMA supported this as a "Developing" item. NEWMA heard from NIST who encouraged members to consider this work as it applies to all device types.

On the 2013 NCWM Online Position Forum, one Government representative indicated a neutral position on this item with no additional comments.

At the 2013 NCWM Annual Meeting Open Hearings, the Committee heard comments from Juana Williams (NIST OWM) who reiterated OWM's comments from the 2013 Interim Meeting, suggesting that it may be appropriate to develop separate requirements to address new and future technologies which can be remotely configured with removable media. OWM plans to develop draft language and ask for input from the various Sectors at their upcoming meetings. Ms. Williams also noted the suggestion made at the 2013 NCWM Interim Meeting by Dmitri Karimov, LC, speaking on behalf of the MMA, that a provision might be added to the General Code to address this type of equipment.

Julie Quinn (MN) agreed with OWM's comments and indicated support for possibly including requirements in the General Code to address newer and emerging technologies. Dmitri Karimov (LC), speaking on behalf of MMA, concurred with this suggestion.

At the August 2013 Grain Analyzer Sector Meeting, OWM had not drafted a definition for remote configuration capability to address devices which are programed using removable media such as SD cards or flash drives. During the August 2013 grain analyzer sector meeting, the Sector discussed other ways devices can be remotely configured that should also be considered when drafting a definition for remote configuration capability to address these devices.

Mr. Hurburgh mentioned that we also need to consider devices that use cloud computing to remotely configure a device and suggested that we consider the various ways a device can be remotely configured.

The sector agreed that OWM should develop a proposal for a definition for remote configuration capability that addresses devices that use removable media such as SD cards, flash drives or other methods not covered by the existing definition.

At the 2013 Weighing Sector meeting, OWM requested members of the Sector help identify the various types of removable storage media (e.g., USB flash drives, SD memory cards, etc.) currently in use with weighing equipment and to describe the functionality of that media. The information provided would likely be used by OWM to develop some draft proposals to amend NIST Handbook 44 to adequately address the security of the metrological significant parameters of devices using such media.

The following feedback was provided by members of the Sector to OWM:

- I am not in favor of changing standards for advances in technology.

- Both SD cards and USB Flash drives can be used for data transfer and data storage. It would be difficult to address all devices by changing the General Code.
- There are other technologies besides SD and Flash digital storage devices that must be considered, e.g. Eprom and EEE, etc.,
- Several members commented that they felt it would likely be necessary to separate requirements in the various codes of NIST Handbook 44.
- It is not reasonable to expect manufacturers to share the technologies used in a public forum such as this meeting and it might be better to speak individually with representatives of the different manufacturers.

At the end of the discussion, a few weighing sector members offered to provide technical expertise to assist OWM in answering any questions that might arise during future development of proposed requirements to address this issue.

At the 2013 Measuring Sector Meeting, the Sector did not support the language "may or may not be necessary" because this phrase changes the category of what is considered "remote configuration capability." The Sector agreed that, if the card (or other removable device) needs to be a part of the measuring device for normal operation, then the card is effectively part of the device; in that case, the measuring device is a Category 1. If the card is only used for configuration or calibration and is not necessary for the operation of the measuring device, the measuring device is a Category 2. The Sector discussed whether or not additional guidance might be needed on what is covered by each sealing category; however, concluded that the definitions are adequate as currently written.

At the August 2014 Grain Analyzer sector meeting, the sector considered the responses from NIST OWM, SWMA, WWMA, Measuring Sector and Weighing Sector concerning devices that use SD cards, flash drives or other methods for configuration.

Conclusion:
The Grain Analyzer Sector agreed that the current proposed language may be confusing and agreed to withdraw their proposal for changes to the definition of remote configuration.

6. Status of Interagency Agreement

Source:
Cathy Brenner, USDA, GIPSA
G. Diane Lee, NIST, OWM

Background/Discussion: The current Interagency Agreement is the fourth 5-year agreement of the on-going calibration program. The agreement was signed in March 2010 and runs through analysis of the 2014 crop and issuance of the 2015 Certificates of Conformance. Thus, we have just started the fifth year of the current agreement. It should be noted that annual calibration activities occur in two government fiscal years and are better defined by a starting date of July 1.

GIPSA noted that in order to provide the standardization services to the commercial system, GIPSA TSD discussed options for improving the process and reducing the burden on all parties. At the August 2013 Grain Analyzer Sector meeting, GIPSA sought input from the sector on limiting the number of samples tested to a maximum of 10 samples per 2-percent moisture interval for all grains. It was noted that fewer sample are needed to calibrate the new UGMA meters. It was also noted that GIPSAs fees are increasing and with no changes to the program the manufacturers' fees will increase. During the discussion one alternate proposal was to base the cost on 1/3 shared cost of the program where GIPSA and NIST cover 1/3 the cost of the program each and manufacturers split 1/3 the cost. It was noted during the meeting that due to budget issues GIPSA and NIST will likely not be able to fund more than the 30,000 per year.

Ms. Brenner agreed to review the statistics to determine how the sample size of up to 30 samples per 2-percent moisture interval per grain type was established and to investigate the impact of reducing the sample size to 10

samples per 2-percent moisture interval per grain type. The sector agreed by consensus to reduce the number of samples used in the ongoing calibration program for each 2-percent moisture range per grain type as long as the integrity of the program is not affected.

A fifth 5-year Interagency Agreement has been drafted based upon GIPSA's base cost per NTEP only meters above the cost to maintain the official moisture meters. The agreement is currently being forwarded for appropriate signatures at NIST and then to GIPSA. The interagency agreement includes tables of the base cost per NTEP only meter and descriptions for funding calculations and fee tables for each year of the agreement. The fee tables are based on the reduced number of samples per 2-percent moisture interval.

At the 2014 Grain Analyzer Sector Meeting Ms. Cathy Brenner reported that she found no statistical impact in reducing the sample size in the ongoing calibration program from up to 30 samples to 10 samples per 2-percent interval. During the review of the ongoing calibration fee tables, Mr. Andy Gell, Foss North America pointed out that the cost per meter in the ongoing calibration program would be decreased due to the reduction in the number of samples per 2% moisture interval. Mr. Gell then noted that the tables showed an increase in the cost per meter. After further review by the sector an error was found in calculating the cost per meter. Corrections were made to the fee tables and the corrections to the tables are shown below:

Table 1 Description of Program Fee Schedule Acronyms and Funding Source Calculations

Key and/or Funding Source	Description
O	Number of GIPSA official meters
N	Number of NTEP only meters (non-GIPSA official meters)
BC	FY Base Cost per NTEP only Meters in the ongoing calibration program
TP	Total NTEP Program Cost = N x BC
TM	(O + N) Total Meters including Official Meters
NIST	National Institute of Standards and Technology Contribution = TP /3 up to and not more than 30,000
GIPSA	Grain Inspection Packers and Stockyards Administration contribution = TP /3 up to and not more than 30,000
MCMT	Manufacturers Cost per Meter Type = TP-NIST contribution - GIPSA contribution

Table 2 Ongoing Calibration Program Base Cost per NTEP only meter per Fiscal Year

Fiscal Year (FY)	NTEP On-going Calibration Program Base Cost per NTEP only meter (above GIPSA costs to maintain the official moisture meters) (BC)
2015	$17,678
2016	$18,064
2017	$18,453
2018	$18,513
2019	$18,576

~~**NTEP On-going Calibration Program Fee Schedule For Year 2015**~~							
~~(1) Total Meters (including official meter) (TM)~~ = O+N	~~(2) Number of NTEP only meters (non-GIPSA official Meters)~~ = N	~~(3) Base Cost per Pool Of NTEP Meters in ongoing Calibration Program~~ = BC	~~(4) Total Program Cost (TP)~~ = NxBC	~~Funding Contributions From Participants~~ ~~(5) NIST~~ = TP/3	~~(6) GIPSA~~ =TP/3	~~(7) Total funding from all mfg's meter types~~ = TMxMCMT	~~(8) Mfg's Cost Per Meter Type (MCMT)~~ = TP-NIST-GIPSA
~~3~~	~~1~~	~~17,678~~	~~17,678~~	~~5,893~~	~~5,893~~	~~17,678~~	~~5,893~~
~~4~~	~~2~~	~~17,678~~	~~35,356~~	~~11,785~~	~~11,785~~	~~47,141~~	~~11,785~~
~~5~~	~~3~~	~~17,678~~	~~53,034~~	~~17,678~~	~~17,678~~	~~88,390~~	~~17,678~~
~~6~~	~~4~~	~~17,678~~	~~70,712~~	~~23,571~~	~~23,571~~	~~141,424~~	~~23,571~~
~~7~~	~~5~~	~~17,678~~	~~88,390~~	~~29,463~~	~~29,463~~	~~206,243~~	~~29,463~~
~~8~~	~~6~~	~~17,678~~	~~106,068~~	~~30,000~~	~~30,000~~	~~368,544~~	~~46,068~~
~~9~~	~~7~~	~~17,678~~	~~123,746~~	~~30,000~~	~~30,000~~	~~573,714~~	~~63,746~~
~~10~~	~~8~~	~~17,678~~	~~141,424~~	~~30,000~~	~~30,000~~	~~814,240~~	~~81,424~~

NTEP On-going Calibration Program Fee Schedule For Year 2016							
(1) Total Meters (including official meter) (TM) = O+N	(2) Number of NTEP only meters (non-GIPSA official Meters) = N	(3) Base Cost per NTEP only Meters in ongoing Calibration Program = BC	(4) Total Program Cost (TP) = NxBC	Funding Contributions From Participants			
				(5) NIST = TP/3	(6) GIPSA =TP/3	(7) Total funding from all mfg's meter types = TMxMCMT	(8) Mfg's Cost Per Meter Type (MCMT) = TP-NIST-GIPSA
3	1	18,064	18,064	6,021	6,021	18,064	6,021
4	2	18,064	36,128	12,043	12,043	48,171	12,043
5	3	18,064	54,192	18,064	18,064	90,320	18,064
6	4	18,064	72,256	24,085	24,085	144,512	24,085
7	5	18,064	90,320	30,000	30,000	212,240	30,320
8	6	18,064	108,384	30,000	30,000	387,072	48,384
9	7	18,064	126,448	30,000	30,000	598,032	66,448
10	8	18,064	144,512	30,000	30,000	845,120	84,512

NTEP On-going Calibration Program Fee Schedule For Year 2017							
(1) Total Meters (including official meter) (TM) = O+N	(2) Number of NTEP only meters (non-GIPSA official Meters) = N	(3) Base Cost per NTEP only Meters in ongoing Calibration Program = BC	(4) Total Program Cost (TP) = NxBC	Funding Contributions From Participants			
				(5) NIST = TP/3	(6) GIPSA =TP/3	(7) Total funding from all mfg's meter types = TMxMCMT	(8) Mfg's Cost Per Meter Type (MCMT) = TP-NIST-GIPSA
3	1	18,453	18,453	6,151	6,151	18,453	6,151
4	2	18,453	36,906	12,302	12,302	49,208	12,302
5	3	18,453	55,359	18,453	18,453	92,265	18,453
6	4	18,453	73,812	24,604	24,604	147,624	24,604
7	5	18,453	92,265	30,000	30,000	225,855	32,265
8	6	18,453	110,718	30,000	30,000	405,744	50,718
9	7	18,453	129,171	30,000	30,000	622,539	69,171
10	8	18,453	147,624	30,000	30,000	876,240	87,624

NTEP On-going Calibration Program Fee Schedule
For Year 2018

(1) Total Meters (including official meter) (TM) = O+N	(2) Number of NTEP only meters (non-GIPSA official Meters) = N	(3) Base Cost per NTEP only Meters in ongoing Calibration Program = BC	(4) Total Program Cost (TP) = NxBC	Funding Contributions From Participants			
				(5) NIST = TP/3	(6) GIPSA =TP/3	(7) Total funding from all mfg's meter types = TMxMCMT	(8) Mfg's Cost Per Meter Type (MCMT) = TP-NIST-GIPSA
3	1	18,513	18,513	6,171	6,171	18,513	6,171
4	2	18,513	37,026	12,342	12,342	49,368	12,342
5	3	18,513	55,539	18,513	18,513	92,565	18,513
6	4	18,513	74,052	24,684	24,684	148,104	24,684
7	5	18,513	92,565	30,000	30,000	227,955	32,565
8	6	18,513	111,078	30,000	30,000	408,624	51,078
9	7	18,513	129,591	30,000	30,000	626,319	69,591
10	8	18,513	148,104	30,000	30,000	881,040	88,104

NTEP On-going Calibration Program Fee Schedule
For Year 2019

(1) Total Meters (including official meter) (TM) = O+N	(2) Number of NTEP only meters (non-GIPSA official Meters) = N	(3) Base Cost Per NTEP only Meters in ongoing Calibration Program = BC	(4) Total Program Cost (TP) = NxBC	Funding Contributions From Participants			
				(5) NIST = TP/3	(6) GIPSA =TP/3	(7) Total funding from all mfg's meter types = TMxMCMT	(8) Mfg's Cost Per Meter Type (MCMT) = TP-NIST-GIPSA
3	1	18,576	18,576	6,192	6,192	18,576	6,192
4	2	18,576	37,152	12,384	12,384	49,536	12,384
5	3	18,576	55,728	18,576	18,576	92,880	18,576
6	4	18,576	74,304	24,768	24,768	148,608	24,768
7	5	18,576	92,880	30,000	30,000	230,160	32,880
8	6	18,576	111,456	30,000	30,000	411,648	51,456
9	7	18,576	130,032	30,000	30,000	630,288	70,032
10	8	18,576	148,608	30,000	30,000	886,080	88,608

NTEP On-going Calibration Program Fee Schedule
For Year 2015

(1) Total Meters (including official meter) (TM) = O+N	(2) Number of NTEP only meters (non-GIPSA official Meters) = N	(3) Base Cost per NTEP only Meters in ongoing Calibration Program = BC	(4) Total Program Cost (TP) = NxBC	Funding Contributions From Participants			
				(5) NIST = TP/3	(6) GIPSA =TP/3	(7) Total funding from all mfg's meter types =TP-NIST-GIPSA	(8) Mfg's Cost Per Meter Type (MCMT) =(TP-NIST-GIPSA)/TM
3	1	17,678	17,678	5,893	5,893	5,893	1,964
4	2	17,678	35,356	11,785	11,785	11,785	2,946
5	3	17,678	53,034	17,678	17,678	17,678	3,536
6	4	17,678	70,712	23,571	23,571	23,571	3,928
7	5	17,678	88,390	29,463	29,463	29,463	4,209
8	6	17,678	106,068	30,000	30,000	46,068	5,759
9	7	17,678	123,746	30,000	30,000	63,746	7,083
10	8	17,678	141,424	30,000	30,000	81,424	8,142

NTEP On-going Calibration Program Fee Schedule
For Year 2016

(1) Total Meters (including official meter) (TM) = O+N	(2) Number of NTEP only meters (non-GIPSA official Meters) = N	(3) Base Cost per NTEP only Meters in ongoing Calibration Program = BC	(4) Total Program Cost (TP) = NxBC	Funding Contributions From Participants			
				(5) NIST = TP/3	(6) GIPSA =TP/3	(7) Total funding from all mfg's meter types = TP-NIST-GIPSA	(8) Mfg's Cost Per Meter Type (MCMT) =(TP-NIST-GIPSA)/TM
3	1	18,064	18,064	6,021	6,021	6,021	2,007
4	2	18,064	36,128	12,043	12,043	12,043	3,011
5	3	18,064	54,192	18,064	18,064	18,064	3,613
6	4	18,064	72,256	24,085	24,085	24,085	4,014
7	5	18,064	90,320	30,000	30,000	30,320	4,331
8	6	18,064	108,384	30,000	30,000	48,384	6,048
9	7	18,064	126,448	30,000	30,000	66,448	7,383
10	8	18,064	144,512	30,000	30,000	84,512	8,451

NTEP On-going Calibration Program Fee Schedule
For Year 2017

(1) Total Meters (including official meter) (TM) = O+N	(2) Number of NTEP only meters (non-GIPSA official Meters) = N	(3) Base Cost per NTEP only Meters in ongoing Calibration Program = BC	(4) Total Program Cost (TP) = NxBC	Funding Contributions From Participants			
				(5) NIST = TP/3	(6) GIPSA =TP/3	(7) Total funding from all mfg's meter types = TP-NIST-GIPSA	(8) Mfg's Cost Per Meter Type (MCMT) =(TP-NIST-GIPSA)/TM
3	1	18,453	18,453	6,151	6,151	6,151	2,050
4	2	18,453	36,906	12,302	12,302	12,302	3,076
5	3	18,453	55,359	18,453	18,453	18,453	3,691
6	4	18,453	73,812	24,604	24,604	24,604	4,101
7	5	18,453	92,265	30,000	30,000	32,265	4,609
8	6	18,453	110,718	30,000	30,000	50,718	6,340
9	7	18,453	129,171	30,000	30,000	69,171	7,686
10	8	18,453	147,624	30,000	30,000	87,624	8,762

NTEP On-going Calibration Program Fee Schedule
For Year 2018

(1) Total Meters (including official meter) (TM) = O+N	(2) Number of NTEP only meters (non-GIPSA official Meters) = N	(3) Base Cost per NTEP only Meters in ongoing Calibration Program = BC	(4) Total Program Cost (TP) = NxBC	Funding Contributions From Participants			
				(5) NIST = TP/3	(6) GIPSA =TP/3	(7) Total funding from all mfg's meter types = TP-NIST-GIPSA	(8) Mfg's Cost Per Meter Type (MCMT) = (TP-NIST-GIPSA)/TM
3	1	18,513	18,513	6,171	6,171	6,171	2,057
4	2	18,513	37,026	12,342	12,342	12,342	3,086
5	3	18,513	55,539	18,513	18,513	18,513	3,703
6	4	18,513	74,052	24,684	24,684	24,684	4,114
7	5	18,513	92,565	30,000	30,000	32,565	4,652
8	6	18,513	111,078	30,000	30,000	51,078	6,385
9	7	18,513	129,591	30,000	30,000	69,591	7,732
10	8	18,513	148,104	30,000	30,000	88,104	8,810

NTEP On-going Calibration Program Fee Schedule For Year 2019							
(1) Total Meters (including official meter) (TM) = O+N	(2) Number of NTEP only meters (non-GIPSA official Meters) = N	(3) Base Cost Per NTEP only Meters in ongoing Calibration Program = BC	(4) Total Program Cost (TP) = NxBC	Funding Contributions From Participants			
				(5) NIST = TP/3	(6) GIPSA =TP/3	(7) Total funding from all mfg's meter types = TP-NIST-GIPSA	(8) Mfg's Cost Per Meter Type (MCMT) =(TP-NIST-GIPSA)/TM
3	1	18,576	18,576	6,192	6,192	6,192	2,064
4	2	18,576	37,152	12,384	12,384	12,384	3,096
5	3	18,576	55,728	18,576	18,576	18,576	3,715
6	4	18,576	74,304	24,768	24,768	24,768	4,128
7	5	18,576	92,880	30,000	30,000	32,880	4,697
8	6	18,576	111,456	30,000	30,000	51,456	6,432
9	7	18,576	130,032	30,000	30,000	70,032	7,781
10	8	18,576	148,608	30,000	30,000	88,608	8,861

7. Test Weight per Bushel Acceptance and Maintenance Tolerance

Source:
Mr. Jeffrey D. Adkisson, Grain and Feed Association of Illinois

Purpose:
Due to problems cited in the grain and feed industry, review and make any needed changes to the test weight per bushel tolerances in *NIST Handbook 44* Section 5.56(a).

Item under Consideration:
During the discussion of this item at the 2012 sector meeting it was noted that because the system is rapidly changing over to the new UGMA technology which is going to result in the improvement in TW readings, TW should resolve itself as older instruments are retired. It was also mentioned that test weight data is needed to review the current system to make any needed changes to test weight per bushel and that sample selection when testing meters for test weight, should be reviewed. It was recommended that TW per bushel comparison charts be developed for review. Cathy Brenner developed these charts and the charts are available for review or can be downloaded for printing at the following web address:

http://www.ncwm.net/resources/dyn/files/1081742zef27d924/_fn/TW+2013+Sector+Meeting.pdf

Background / Discussion:
This is a carryover from the sector's 2011 meeting. Mr. Adkisson, Grain and Feed Association of Illinois, cited problems his industry is having regarding Test Weight (TW) per bushel. GMMs that have failed TW during field

inspection are sent to the manufacturer for repair. When the meters are returned, the reports indicate that no problems have been found. There are also situations where a meter has failed TW. When the state inspector subsequently tested the elevator's quart kettle it matched the meter, but it didn't match the state inspector's sample. This is particularly frustrating for the country elevators in Illinois that are using the GMM TW only as a screening tool.

At the Sector's August 2011 meeting a task group was formed to investigate the whole TW system with the goal of defining procedures that would improve TW both for the user and for the inspection system. Past data obtained by the Sector had indicated that the existing tolerances were reasonable. It was felt that increasing TW tolerances would only cover up the problems. What was needed was an investigation of the whole system of calibrating meters, then translating that calibration into the field, and then keeping it that way.

Dr. Charles R. Hurburgh, Jr., Iowa State University, agreed to head the task group. Other TW Task Group members included:

- Mr. Jeffery Adkisson – Grain and Feed Association of Illinois
- Ms. Diane Lee – NIST, OWM
- Ms. Cassie Eigenmann – DICKEY-john Corporation
- Mr. Ivan Hankins – Iowa Department of Agriculture/Weights and Measures
- Mr. Tim Kaeding – Perten Instruments, Inc.
- Mr. Karl Cunningham – Illinois Department of Agriculture

Further action on the issue of tolerances was postponed until the TW Task Group was able to recommend appropriate action.

In Early 2012 the TW Task Group developed the following list of Action Items:

- Survey the grain industry as to the frequency of discounting each of the major grains (wheat, corn, and soybeans) for test weight, and within those discounted the frequency of use of the meter test weight versus the cup-bucket test weight.
- Survey the industry for comparative data between meters and an Official GIPSA agency on the same samples.
- Develop a draft procedure for sample selection and pre-qualification

Dr. Hurburgh reported that discounting for low TW was not an issue in either 2010 or 2011. TWs for corn were so high that discounting was not an issue. Within Iowa most grain elevators were using the TW reported by their GMM. Only a few were using the standard quart kettle method. This is likely to change in the 2012 harvest as low TWs are likely to be more common. Also, there may not be as much TW increase in drying as would normally be expected. TW may come up again as a discount factor.

Same sample TW data has not been collected comparing grain elevator GMMs with an Official GIPSA agency. Dr. Hurburgh explained that this information should be relatively easy to obtain, because in almost every case when a train is officially graded the samples are run at the grain elevator first. Since last year's sector meeting, the rapid acceptance of the new UGMA GMMs as Official Meters for corn, soybeans, sunflowers, and grain sorghum (with the remaining grains scheduled to switch to UGMA GMMs for Official Inspection on May1, 2013), has altered some of the issues. The new technology not only provides a better moisture measurement, but a better TW measurement as well.

The remaining action item that the task group believed was necessary was a procedure for pre-qualifying TW samples as being good predictors for the TW function as well as moisture function. Most States pre-screen moisture samples to get the outliers out of the system. That pre-qualification would have to be expanded if TW is to be actively used to reject meters on the basis of TW.

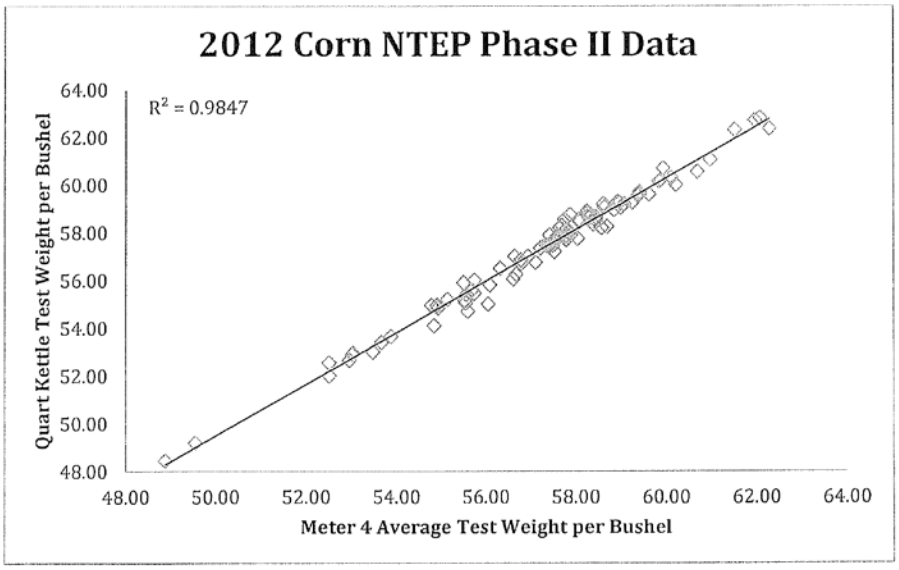
Dr. Hurburgh recommended that the sector not adjust TW tolerances at this time, because the system is rapidly changing over to the new technology which is going to result in the improvement in TW readings. The problem should resolve itself as older instruments are retired.

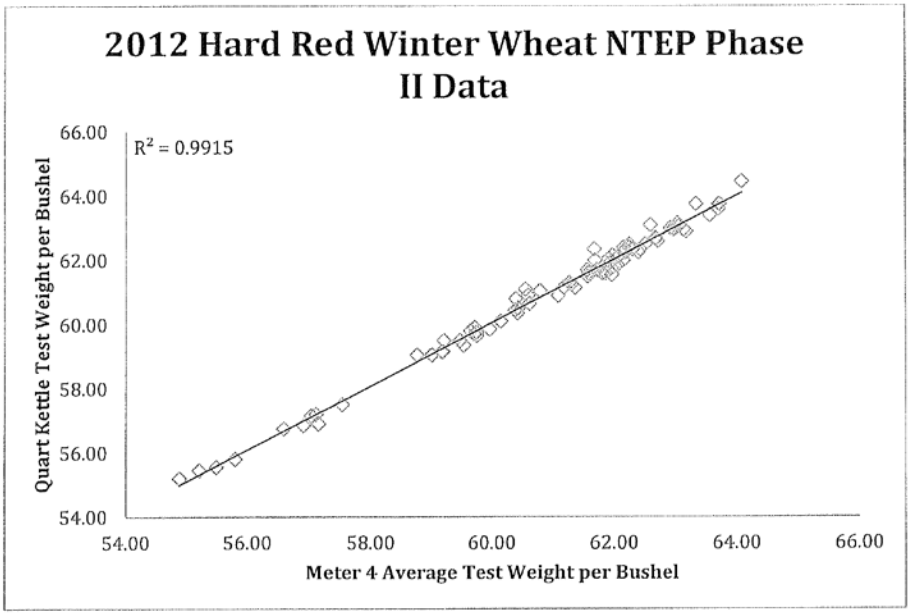
Mr. Karl Cunningham, Illinois Dept. of Agriculture, informed the Sector that Illinois's TW rejection rate has gone down in the last two years. He has no problem with TW on the meters in his laboratory and doesn't think the present tolerances are a problem. Many of the field problems may be due to rough handling of the meters during shipping. Mr. Cunningham advises elevators who have to have their devices worked on to take them to the manufacturer's service department themselves if at all possible.

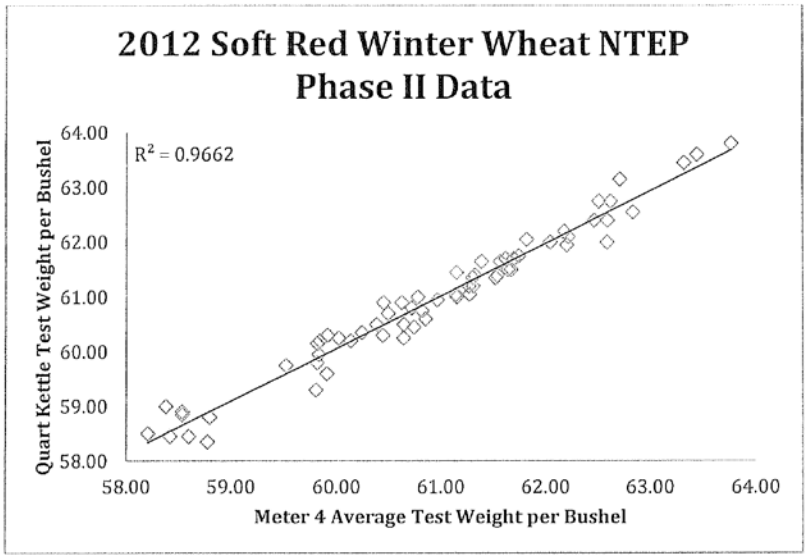
Mr. Tim Kaeding, Perten Instruments, suggested that there might be value in expanding the Phase II OCP grain moisture comparison charts to include TW. Dr. Hurburgh recommended that a TW comparison chart showing the spread of TW measurements for individual meters against the corresponding official quart kettle TW measurements would address the tolerance issue, whereas a bias plot would not. He suggested plotting meter TWs on the x-axis and quart kettle results on the y-axis. A best-fit line could be drawn for each meter.

The sector agreed that TW comparison charts should be prepared for the 3 grains which are most likely to be subject to discounts on the basis of TW: Corn and two wheat classes. The wheat classes selected were: Hard Red Winter and Soft Red Winter. Manufacturer approval is required for NTEP Phase II TW performance data to be released for publication even if individual instruments are not identified. The two meter manufacturers present indicated that they would approve the release of this data. Permission would have to be obtained from the other manufacturers. The sector agreed to postpone further action on changing TW tolerances until more information was available.

At the August 2013 Sector Meeting Ms. Brenner reviewed test weight per bushel data for Corn, Hard Red Winter Wheat and Soft Red Winter Wheat (See charts below). The data showed that NTEP meters aligned closely with the official quart kettle test weight per bushel measurements. States noted that they have seen a significant improvement in test weight per bushel measurements and lower complaints have been received concerning test weight. Karl Hansan stated that he is collecting data on the moisture changes in grain samples over time when using the samples in the field. This data can be used to improve the field inspection of the test weight per bushel measurements on grain analyzers. Ms. Lee provided a draft copy of a weights and measures newsletter article entitled "Determining Reference Test Weight per Bushel Value of Grains." Following the August Sector Meeting the article was published in the Weights and Measures Newsletter and can be accessed at: http://www.nist.gov/pml/wmd/pubs/upload/WMConnections.pdf. This article will help to ensure that States are following proper procedures when assigning reference test weight per bushel values to grains used to test instruments that provide test weight per bushel measurements.







At the August 2014 Grain Analyzer Sector meeting, Mr. Hanson noted that due to time constraints he was unable to collect data on test weight per bushel measurements of field grain samples. Mr. Jeffrey Adkisson, Grain and Feed Association of Illinois reported that the number of complaints concerning test weight has drop. He also noted that he was not sure if it was due to the growing season or if better test procedures are being used by State weights and measures officials. Manufacturers and others noted that they would like the weight per bushel charts to continue to determine how test weight is affect by crop issues.

8. Report on International Organization of Legal Metrology (OIML) TC 17/SC 1 R 59 *Moisture Meters for Cereal Grains and Oilseeds*

Background / Discussion:
This item is included on the sector's agenda to provide a summary of the activities of OIML TC17/SC1 for the grain analyzer sector and to those Sector members that participate on the United States National Working Group (USNWG) on grain moisture meters. In addition the sector is asked to review a proposal to change the Humidity test in NCWM Publication 14 to align with the OIML D11 and IEC damp heat test procedure.

OIML TC17/SC1 was tasked to revise OIML R 59 *Moisture Meters for Cereal Grains and Oilseeds* to reflect new technologies and actual grain analysis. The Co-Secretariats (China and the United States) are working closely with an International Project Group to revise OIML Recommendation R 59 *Moisture Meters for Cereal Grains and Oilseeds*. The U.S. completed a six committee draft (6th CD) of OIML R 59, which was circulated to the international project group and the U.S. National Working Group (USNWG) on grain moisture measuring devices for review and comment on March 6, 2013. The U.S. Co-secretariat requested that the comments to the 6th CD be submitted by June 6, 2013. The U.S. Secretariat collated the U.S. and international comments to the 6th CD and these comments were reviewed at the TC17/SC1 meeting hosted by NIST/OWM July 23-24, 2013.

At the TC17/SC1 July 23-24, 2013 meeting, comments to the 6th CD were reviewed and the major discussion was harmonization of test procedures between OIML TC17/SC1 R59 *Moisture Meters for Cereal Grains and Oilseeds* and OIML TC17/SC8 Recommendation on *Protein Measuring Instruments for Cereal Grain and Oil Seeds.*

At the July 2013 meeting it was discussed that the international damp heat test (OIML D11 and IEC) is significantly different from the NTEP Humidity test. The international test is more robust and more accurately reflects the environmental conditions an instrument is likely to encounter in field use. The damp heat test is conducted at a maximum temperature of either the manufacturer specified upper ambient temperature or 30 °C and a maximum relative humidity of 85%. The damp heat test is designed to evaluate the device under the environmental (temperature and relative humidity) conditions it will encounter during operation.

During the August 2013 Grain Analyzer Sector meeting the Sector reviewed the proposal to replace the NTEP Publication 14 GMM and NIR Humidity test procedure with the OIML D11 Damp Heat test procedure. It was noted that the proposed changes to the humidity test in Publication 14 were based on OIML D11 requirements Damp heat test, Severity level 1. During discussion of this item, it was mentioned that the temperature and humidity levels as specified in OIML D11 may pose unsafe operating conditions to laboratory staff and also that grain moisture meters are not designed to operate in these extreme conditions. A question was asked if another severity level in D11 would more closely match the testing that is currently in Publication 14 and that has been used for many years in the U.S. Ms. Lee, reviewed OIML D11 requirements following the meeting and found that both severity level 1 and 2 exceed the temperature and humidity levels specified in Publication 14. The Sector agreed by consensus that the OIML D11, Damp heat test, is much too severe for grain moisture meters and that publication 14 should not be changed to meet the requirements of OIML D11.

The U.S. will develop a 7th CD that will be distributed for voting based on comments to the 6th CD, the July 2013 TC17/SC1 meeting and the GA Sector feedback from the August 2013 meeting.

At the August 2014 Grain Analyzer Sector meeting, Ms. Diane Lee, NIST OWM, provided an update on the status of the 7th CD on *Moisture Meters for Cereal Grains and Oilseed.* Ms. Lee reported that the U.S. is nearing completion of the 7th CD on *Moisture Meters for Cereal Grains and Oilseed.* This document will be forwarded to the TC17/SC1 participating and observing countries for a vote and will also be forwarded to participants of the USNWG on Grain Moisture Measuring Devices for vote and comment.

9. Report on OIML TC 17/SC 8 *Protein Measuring Instruments for Cereal Grain and Oil Seeds*

Background / Discussion:
This item was included on the sector's agenda to provide a summary of the activities of OIML TC 17/SC 8 to the grain analyzer sector and to those Sector members that participate on the United States National Working Group (USNWG) on grain protein measuring instruments. OIML TC17/SC8 was formed to study the issues and to develop a Recommendation on *Protein Measuring Instruments for Cereal Grain and Oil Seeds.* Australia is the Secretariat for this subcommittee. The third committee draft (3rd CD) for this Recommendation was circulated to the US national Working group for comments on July 3, 2012 for review and comment and comments were requested by September 8, 2012. The U.S. Comments to the 3rd CD were forwarded to the secretariat and the secretariat developed the 4th CD based on these comments.

The 4th CD was circulated to the USNWG on grain protein measuring instruments on April 9, 2013 and comments to the 4th CD of TC 17/SC 8 were requested by June 13, 2013. The U.S. comments to the 4th CD were forwarded to the secretariat. The U.S. was requested to vote on the 4th CD and a vote of no was provided due to a number of differences in the test procedures of the OIML Recommendation for *Protein Measuring Instruments for Cereal Grain and Oil Seeds* and the OIML Recommendation 59 *Moisture Meters for Cereal Grain and Oilseeds.*

A meeting was hosted by NIST, OWM, July 24-25, 2013 to discuss the comments to the 4th CD for the Recommendation on *Protein Measuring Instruments for Cereal Grain and Oil Seeds*. Discussions on 4th CD dealt mostly with harmonization of testing with the 6th CD of the OIML Recommendation R59 *Moisture Meters for Cereal Grain and Oilseeds*, software requirements, and influence quantities and test sample temperature.

At the August 2013 Grain Analyzer Sector meeting, the Sector reiterated their concerns with the OIML D11 damp heat test and agreed that the damp heat test in OIML Recommendation on Protein Measuring Instruments for Cereal Grain and Oil Seeds, 4th CD should be replaced with the humidity test as written in OIML R59 CD6.

The TC17/SC8 Secretariat will distribute a 5th CD for voting.

At the August 2014 Grain Analyzer Sector meeting, Ms. Diane Lee, NIST OWM, provided an update on the status of the 5th CD on *Protein Measuring Instruments for Cereal Grain and Oil Seeds*. The 5th CD on *Protein Measuring Instruments for Cereal Grain and Oil Seeds* was sent via e-mail to the USNWG on Protein Measuring Device on August 26, 2014 for a vote and comments. The USNWG participants were requested to provide their vote and any comments to the 5th CD by October 14, 2014. Ms. Lee encouraged the Grain Analyzer Sector members that are also participating on the USNWG to provide a vote and any comment to the 5th CD on Protein *Measuring Instruments for Cereal Grain and Oil Seed.*

10. Software Sector Items

(a) Identification of Certified Software

Source:
NTETC Software Sector

Purpose:
Review and provide comment to the Software Sector reports and conclusion on software issues.

Background:

This item originated as an attempt to answer the question "How does the field inspector know that the software running in the device is the same software evaluated and approved by the lab?" In previous meetings it was shown that the international community has addressed this issue (both WELMEC and OIML).

From WELMEC 7.2:

> **Required Documentation:**
> The documentation shall list the software identifications and describe how the software identification is created, how it is inextricably linked to the software itself, how it may be accessed for viewing and how it is structured in order to differentiate between version changes with and without requiring a type approval**.**

From OIML D-31:

> The executable file "**tt100_12.exe**" is protected against modification by a checksum. The value of checksum as determined by algorithm **XYZ** is **1A2B3C**.

Previous discussions have included a listing of some additional examples of possible valid methods (not limiting):

- CRC (cyclical redundancy check)
- Checksum
- Inextricably Linked version no.
- Encryption
- Digital Signature

Is there some method to give the weights and measures inspector information that something has changed?
Yes, the Category III Audit Trail or other means of sealing.

How can the weights and measures inspector identify an NTEP Certified version?
They can't, without adding additional requirements like what is described here, in conjunction with including the identifier on the CC).

The sector believes that we should work towards language that would include a requirement similar to the International Organization of Legal Metrology (OIML) requirement in *NIST Handbook 44*. It is also the opinion of the sector that a specific method should not be defined; rather the manufacturer should utilize a method and demonstrate the selected identification mechanism is suitable for the purpose. It is not clear from the discussion where such proposed language might belong.

NTEP strongly recommends that metrological software be separated from non-metrological software for ease of identification and evaluation.

From OIML:

> Separation of software parts - All software modules (programmes, subroutines, objects etc.) that perform metrologically significant functions or that contain metrologically significant data domains form the metrologically significant software part of a measuring instrument (device or sub-assembly). The conformity requirement applies to all parts and parts shall be marked according to Section G-S-X.X.
>
> If the separation of the software is not possible or needed, then the software is metrologically significant as a whole.

(Segregation of parameters is currently allowed - see table of sealable parameters)

Initial draft proposed language: (G-S.1.1?)

NIST Handbook 44 (This has been written into G-S.1.d.3): Identification of Certified Software:

> **Software-based electronic devices shall be designed such that the metrologically significant software is clearly identified by the version or revision number. ~~The identification~~, and this identification ~~of the software~~ shall be ~~inextricably~~ directly and inseparably linked to the software itself. The version or revision number may consist of more than one part, but at least one part shall be dedicated to the metrologically significant software.**

From NCWM Publication 14:

Identification of Certified Software:

> Note: Manufacturers may choose to separate metrologically significant software from non-metrologically significant software. Separation would allow the revision of the non-metrological portion without the need for further evaluation. In addition, non-metrologically significant software may be updated on devices without breaking a seal, if so designed. Separation of software requires that all software modules (programs, subroutines, objects etc.) that perform metrologically significant functions or that contain metrologically significant data ~~**domains**~~ form the metrologically significant software part of a measuring instrument (device or sub-assembly). If the separation of the software is not possible or needed, then the software is metrologically significant as a whole. ~~**The conformity requirement applies to all parts and parts shall be marked according to Section G-S.X.X.**~~
>
> The manufacturer must describe and possibly demonstrate how the version or revision identifier is directly and inseparably linked to the metrologically significant software. Where the version revision identifier is comprised of more than one part, the manufacturer shall describe which portion represents the metrological significant software and which does not.

From OIML D-31:

> Legally relevant software of a measuring instrument / electronic device / sub-assembly shall be clearly identified with the software version or another token. The identification may consist of more than one part but at least one part shall be dedicated to the legal purpose.
>
> The identification shall be inextricably linked to the software itself and shall be presented or printed on command or displayed during operation or at start up for a measuring instrument that can be turned off and on again. If a sub-assembly/an electronic device has neither display nor printer, the identification shall be sent via a communication interface in order to be displayed/printed on another sub-assembly/electronic device.

The first sentence of the first paragraph above is already addressed in *NIST Handbook 44's* marking requirements.

In 2010, the sector recommended the following change to *NIST Handbook 44*, General Code: G-S.1(d) to add a new subsection (3):

> *(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 20XX)**
>
> *(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)

(3) 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.
[Nonretroactive as of January 1, 201X]
(Added 20XX)

Also the sector recommended the following information be added to *NCWM Publication 14* as explanation/examples:

- Unique identifier must be displayable/printable on command or during operation, etc.
- At a minimum, a version/revision indication (1.02.09, rev 3.0 a, etc.). Could also consist of / contain checksum, etc. (crc32, for example)

There was some additional discussion on this item regarding where this new requirement was best located. It was suggested that the first sentence of G-S.1.d.(3) could be added as a clause to the base paragraph G-S.1(d) text, e.g. "*the current software version or revision identifier for* ***~~not built for purpose~~ software-based*** *devices, which shall be directly and inseparably linked to the software itself;"* .

It also was suggested that the second sentence in G-S.1.d. (3) might be more suitable for *NCWM Publication 14*, as it describes more "how" than "what" the requirement entails.

In addition, the sector considered the following information to be added to *NCWM Publication 14* as explanation/examples:

- The current software identifier must be displayable/printable on command during operation (or made evident by other means deemed acceptable by G-S.1.)
- At a minimum, the software identifier must include a version/revision indication (1.02.09, rev 3.0 a, etc.). It could also consist of / contain checksum, etc. (crc32, for example).
- 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.

Other questions that are still outstanding:

- If we allow hard-marking of the software identifier (the sector has wavered on this in the past), does the above wording then imply that some mechanical means is required (i.e. physical seal) to "inseparably link" the identifier to the software?
- If a device is capable of doing so, does it still have to be able to display, print or communicate the identifier somehow, even if it is hard-marked?

At the 2012 NTETC Software Sector Meeting, there was some discussion as to where the terminology regarding inextricably linking the software version or revision to the software itself belonged. At the moment, it is not incorporated in the proposed text for G-S.1. *NCWM Publication 14* may be a better option for the time being. This would be another item that would benefit from further explanation in a supplementary document.

Several sector members were of the opinion that attempting to make this change at the same time as the earlier changes might be a difficult sell. Mr. Truex, NTEP Administrator, reiterated the necessity of baby steps.

In 2012, the sector thus recommended adding the following to *NCWM Publication 14* and forward to NTETC Weighing, Measuring, Grain Analyzer sectors for feedback:

Identification of Certified Software:

> Note: Manufacturers may choose to separate metrologically significant software from non-metrologically significant software. Separation would allow the revision of the non-metrological portion without the need for further evaluation. In addition, non-metrologically significant software may be updated on devices without breaking a seal, if so designed. Separation of software requires that all software modules (programs, subroutines, objects etc.) that perform metrologically significant functions or that contain metrologically significant data domains form the metrologically significant software part of a measuring instrument (device or sub-assembly). If the separation of the software is not possible or needed, then the software is metrologically significant as a whole. The conformity requirement applies to all parts and parts shall be marked according to Section G-S-X.X.
>
> The manufacturer must describe and possibly demonstrate how the version or revision identifier is directly and inseparably linked to the metrologically significant software. Where the version revision identifier is comprised of more than one part, the manufacturer shall describe which portion represents the metrological significant software and which does not.

Discussion:
The Measuring Sector reviewed this item and had no feedback other than a statement that they support the continuing / ongoing efforts of this sector. The Weighing Sector summary mentioned that no one opted to provide comment. They agreed to take no further action on this item, pending further action from the Software Sector. This was specifically in reference to the accepted symbols.
For the time being, Jim Truex recommended that we not attempt to provide a definition for "software-based device". We discussed the possibility of combining this change with the first agenda item, which had been attempted in previous years. Alternatively, if the HB44 changes from agenda item 1 are made, this agenda item could be addressed in Pub. 14.

Conclusion:
After further discussion, the wording in G-S.1.d under agenda item 1 was changed. Agenda item 2 will remain; however, it will address potential changes to Pub. 14 and contain no suggested modifications to Handbook 44. (See changes and conclusion under agenda item 1 for further details.)

The Sector chair volunteered to review the existing slide presentation detailing the purpose of these changes, to ensure that it accurately reflects this information.

(b) Software Protection/Security

Source:
NTETC Software Sector

Background:
The sector agreed that *NIST Handbook 44* already has audit trail and physical seal, but these may need to be enhanced.

From the WELMEC Document:

> **Protection against accidental or unintentional changes**
> Metrologically significant software and measurement data shall be protected against accidental or unintentional changes.
>
> **Specifying Notes:**

Possible reasons for accidental changes and faults are: unpredictable physical influences, effects caused by user functions and residual defects of the software even though state of the art of development techniques have been applied.

This requirement includes consideration of:

a) Physical influences: Stored measurement data shall be protected against corruption or deletion when a fault occurs or, alternatively, the fault shall be detectable.

b) User functions: Confirmation shall be demanded before deleting or changing data.

c) Software defects: Appropriate measures shall be taken to protect data from unintentional changes that could occur through incorrect program design or programming errors, e.g. plausibility checks.

Required Documentation:
The documentation should show the measures that have been taken to protect the software and data against unintentional changes.

Example of an Acceptable Solution:

- The accidental modification of software and measurement data may be checked by calculating a checksum over the relevant parts, comparing it with the nominal value and stopping if anything has been modified.
- Measurement data are not deleted without prior authorization, e.g. a dialogue statement or window asking for confirmation of deletion.
- For fault detection see also Extension I.

The sector continued to develop a proposed checklist for *NCWM Publication 14*. The numbering will still need to be added. This is based roughly on R 76 – 2 checklist and discussions beginning as early as the October 2007 NTETC Software Sector Meeting. The information requested by this checklist is currently voluntary, however, it is recommended that applicants comply with these requests or provide specific information as to why they may not be able to comply. Based on this information, the checklist may be amended to better fit with NTEP's need for information and the applicant's ability to comply.

The California, Maryland and Ohio laboratories agreed to use this check list on one of the next devices they have in the lab and report back to the sector on what the problems may be. In February 2011, the North Carolina laboratory was also given a copy of the check list to try.

1. Devices with ~~Embedded~~ Software ~~TYPE P (aka built-for-purpose)~~

1.3. Declaration of the manufacturer that the software is used in a fixed hardware and software environment. **AND** ☐ Yes ☐ No ☐ N/A

1.4. Cannot be modified or uploaded by any means after securing/verification. ☐ Yes ☐ No ☐ N/A

Note: It is acceptable to break the "seal" and load new software, audit trail is also a sufficient seal.

1.5. The software documentation contains:

1.5.3. Description of all functions, designating those that are considered metrologically significant. ☐ Yes ☐ No ☐ N/A

1.5.4. Description of the securing means (evidence of an intervention). ☐ Yes ☐ No ☐ N/A

1.5.5. Software Identification, including version / revision ☐ Yes ☐ No ☐ N/A

1.5.6. Description how to check the actual software identification. ☐ Yes ☐ No ☐ N/A

1.6. The software identification is:

1.6.7. Clearly assigned to the metrologically significant software and functions. ☐ Yes ☐ No ☐ N/A

1.6.1.	Description how to check the actual software identification.	☐ Yes ☐ No ☐ N/A
1.6.2.	Provided by the device as documented.	☐ Yes ☐ No ☐ N/A
1.6.3.	Directly linked to the software itself.	☐ Yes ☐ No ☐ N/A

2. ~~Personal Computers, Instruments with PC Components, and Other Instruments, Devices, Modules, and Elements with Programmable or~~ Loadable Metrologically Significant Software ~~TYPE U (aka not built-for-purpose)~~

2.1.	The metrologically significant software is:	
2.1.4.	Documented with all relevant (see below for list of documents) information.	☐ Yes ☐ No ☐ N/A
2.1.5.	Protected against accidental or intentional changes.	☐ Yes ☐ No ☐ N/A
2.2.	Evidence of intervention (such as, changes, uploads, circumvention) is available until the next verification / inspection (e.g., physical seal, Checksum, Cyclical Redundancy Check (CRC), audit trail, etc. means of security).	☐ Yes ☐ No ☐ N/A

3. Software with ~~Closed Shell (~~no access to the operating system and/or programs possible for the user~~)~~

3.1.	Check whether there is a complete set of commands (e.g., function keys or commands via external interfaces) supplied and accompanied by short descriptions.	☐ Yes ☐ No ☐ N/A
3.2.	Check whether the manufacturer has submitted a written declaration of the completeness of the set of commands.	☐ Yes ☐ No ☐ N/A

4. Operating System and / or Program(s) Accessible for the User

4.1.	Check whether a checksum or equivalent signature is generated over the machine code of the metrologically significant software (program module(s) subject to legal control Weights and Measures jurisdiction and type-specific parameters).	☐ Yes ☐ No ☐ N/A
4.2.	Check whether the metrologically significant software will detect and act upon any unauthorized alteration of the metrologically significant software using simple software tools (e.g., text editor).	☐ Yes ☐ No ☐ N/A

5. Software Interface(s)

5.1.	Verify the manufacturer has documented:	
5.1.6.	The program modules of the metrologically significant software are defined and separated.	☐ Yes ☐ No ☐ N/A
5.1.7.	The protective software interface itself is part of the metrologically significant software.	☐ Yes ☐ No ☐ N/A
5.1.8.	The functions of the metrologically significant software that can be accessed via the protective software interface.	☐ Yes ☐ No ☐ N/A
5.1.9.	The parameters that may be exchanged via the protective software interface are defined.	☐ Yes ☐ No ☐ N/A
5.1.10.	The description of the functions and parameters are conclusive	☐ Yes ☐ No ☐ N/A

and complete.

5.1.11. There are software interface instructions for the third party (external) application programmer. ☐ Yes ☐ No ☐ N/A

The Maryland laboratory had particular questions regarding 3.1 and 5.1. The information for 3.1 could be acquired from an operator's manual, a training video, or in-person training. The items in 5.1 were confusing to the evaluators. The terminology is familiar to software developers, but not necessarily others. It was indicated that manufacturers were typically quick to return the filled out questionnaire, but he didn't know how his laboratory was supposed to verify that it was true. Generally, the laboratories wouldn't be expected to verify things to that level. For example, if the manufacturer states that a checksum is used to ensure integrity, the laboratories wouldn't be expected to evaluate the algorithm used.

The intent was to see whether the manufacturer had at least considered these issues, not for evaluators to become software engineers. Perhaps a glossary or descriptive paragraphs might be added to assist the evaluators for if the manufacturer has questions for the evaluators.

OIML makes use of supplementary documents to explain the checklist they use. Below are links:
http://www.oiml.org/publications/D/D031-e08.pdf
http://www.welmec.org/latest/guides/72.html
http://www.welmec.org/fileadmin/user_files/publications/2-3.pdf

WELMEC document 2.3 is the original source for our checklist, but it's been significantly revised and simplified. Mr. Payne, Maryland Department of Agriculture, is going to review the other documents and come up with some suggestions for the checklist. Mr. Roach, California Division of Measurement Standards, is going to begin using the checklist. The international viewpoint is that any device running an operating system is considered to be Type U. Mr. Roach mentioned that they're having lots of problems with "skimmers" stealing PIN's. Is there some way they can detect this?

Mr. Lewis, Rice Lake Weighing Systems, Inc., mentioned that he liked Measurement Canada's website. When answering similar questions, different pages would appear, based on answers to those questions: http://www.ic.gc.ca/eic/site/mc-mc.nsf/eng/lm00573.html

At the 2011 NTETC Software Sector Meeting, the laboratories were polled to obtain any feedback on the use of the checklist. Maryland attempted to use this checklist a few times. They had some difficulty obtaining answers from the manufacturers because the individual(s) interacting with the Maryland evaluator didn't always have the required information on hand. More experience in using the checklist will help determine what needs to be revised.

It was suggested that the checklist could be sent to manufacturers for their feedback as well, with the stipulation that it a completely voluntary exercise and purely informational at this point. The laboratories will coordinate with willing manufacturers to obtain feedback.

Work is ongoing on this item with the intent that it eventually will be incorporated as a checklist in *NCWM Publication 14*; again the laboratories are requested to try utilizing this checklist for any evaluations on software-based electronic devices.

The checklist has been reviewed with an eye to making its terminology clearer to laboratories. Some examples and clarifications have been added as shown in the discussion section of this item. The revised checklist will be distributed to the laboratories for additional review. Maryland and California laboratories agreed to use the checklist on a trial basis.

Discussion:

Over the past year, attempts to use the current checklist did not meet with many difficulties. The checklists were given to the manufacturers to fill out, and that seemed to work rather well. Minor modifications (in red above) were made to clarify certain confusing areas or eliminate redundancy.

Conclusion:
The next step will be to forward it to the four sectors; we can report that the labs have tried using it on a trial basis and we're ready to recommend it for Pub. 14 with the modification suggested here, such as the removal of the Type P / Type U wording.

(c) Software Maintenance and Reconfiguration

Source:
NTETC Software Sector

Background:
After the software is completed, what do the manufacturers use to secure their software? The following items were reviewed by the sector. *Note that agenda Item 3 also contains information on Verified and Traced updates and Software Log.*

1. Verify that the update process is documented (OK)
2. For traced updates, installed Software is authenticated and checked for integrity

   Technical means shall be employed to guarantee the authenticity of the loaded software (i.e. that it originates from the owner of the type approval certificate). This can be accomplished (e.g. by cryptographic means like signing). The signature is checked during loading. If the loaded software fails this test, the instrument shall discard it and either use the previous version of the software **or become inoperative**.

   Technical means shall be employed to guarantee the integrity of the loaded software i.e. that it has not been inadmissibly changed before loading. This can be accomplished e.g. by adding a checksum or hash code of the loaded software and verifying it during the loading procedure. If the loaded software fails this test, the instrument shall discard it and either use the previous version of the software **or become inoperative**.

   Examples are not limiting or exclusive.

3. Verify that the sealing requirements are met

   The sector asked, what sealing requirements are we talking about?

   This item is **only** addressing the **software update**, it can be either verified or traced. It is possible that there are two different security means, one for protecting software updates (software log) and one for protecting the other metrological parameters (Category I II or III method of sealing). Some examples provided by the sector members include but are not limited to:

   - Physical Seal, software log
   - Category III method of sealing can contain both means of security

4. Verify that if the upgrade process fails, the device is inoperable or the original software is restored

   The question before the group is, Can this be made mandatory?

   The manufacturer shall ensure by appropriate technical means (e.g. an audit trail) that traced updates of metrologically significant software are adequately traceable within the instrument for subsequent verification

and surveillance or inspection. This requirement enables inspection authorities, which are responsible for the metrological surveillance of legally controlled instruments, to back-trace traced updates of metrologically significant software over an adequate period of time (that depends on national legislation). The statement in italics will need to be reworded to comply with US weights and measures requirements.

The sector **agreed** that the two definitions below for Verified update and Traced update were acceptable.

Verified Update
A verified update is the process of installing new software where the security is broken and the device must be re-verified. Checking for authenticity and integrity is the responsibility of the owner/user.

Traced Update
A traced update is the process of installing new software where the software is automatically checked for authenticity and integrity, and the update is recorded in a software update log or audit trail.

Note: It's possible that the Philosophy of Sealing section of NCWM Publication 14 may already address the above IF the definitions of Verified and Traced Updates (and the statement below) were to be added. The contrary argument was that it may be better to be explicit).

Use of a Category 3 audit trail is required for a Traced Update. A log entry representing a traced software update shall include the software identification of the newly installed version.

The sector recommended consolidating the definitions with the above statement thus:

Verified Update
A verified update is the process of installing new software where the security is broken and the device must be re-verified. Checking for authenticity and integrity is the responsibility of the owner/user.

Traced Update
A traced update is the process of installing new software where the software is automatically checked for authenticity and integrity, and the update is recorded in a ~~**software update log or**~~ Category 3 audit trail. The audit trail entry shall include the software identification of the newly installed version.

In 2012, the sector recommended that as a first step, the following be added to *NCWM Publication 14*:

The updating of metrologically significant software, including software that checks the authenticity and integrity of the updates, shall be considered a sealable event.

Mr. Truex, NTEP Administrator, indicated his opinion that the above sentence is unnecessary since it's self-evident. It was agreed by the group however to ask the other sectors for feedback on the value of this addition.

Though the sector is currently considering only the single sentence be incorporated into *NCWM Publication 14* for the time being, ultimately, the sector may wish to advance the remaining language of the original item submission.

Discussion:
The Sector had no information indicating that the other sectors had yet been approached for feedback on the value of the addition of the proposed sentence.

Conclusion:
This sector would like the other sectors to evaluate this for inclusion in Pub. 14.

We'd also like to include some description indicating that an existing audit trail should be protected during a software update, though that may already be a requirement. This does appear to be addressed in the Requirements for Metrological Audit Trails Appendices in Pub. 14.

At the August 2013 Grain Analyzer Sector meeting, Mr. Truex provided a review of the Software Sector's proposals for changes to Publication 14 Identification of Certified Software, Software Protection/Security, and Software Maintenance and Reconfiguration. Manufacturers had a number of questions to include "What is the baseline for which software is considered metrologically significant?" After some discussion the manufacturers requested that they be given additional time to review the proposed changes and to allow their software designers an opportunity to look at the proposed changes to software. Ms. Brenner sent an e-mail on August 29, 2013 to all NTEP grain analyzer manufacturers requesting that comments be submitted to Ms. Lee by October 15, 2013.

The Grain Analyzer Sector manufacturers provided the following comments to the Software Sector's proposal for changes to Publication 14:

Grain Analyzer Manufacturer's Comments to Software Sector's Proposed Changes to Publication 14			
Manufacturer	**GA Sector Item**	**Comment**	**Proposed change**
Dickey-john	12a	We currently don't separate the metrologically significant code or identify it's version in the application. We can do this, but it will require a significant code change and validation. Question 1: Does the metrological significant code need to be actually separate from the application or is a label in the application identifying the version of the prediction module used acceptable. This will result in less changes to the code. Question 2: What if we had added a test on the prediction module that inserted key values into the engine, that we would document in the metrological specific tests, that would give a specific answer? For example, if the prediction module is the same then the same inputs with the same calibration file will yield the same results from version to version; log those results and include in the metrological report.	Object to 12.a – The document insists that we separate the legally relevant code and make separate binaries. We could simply add a label that is bound to the prediction module code. Adding this label could tie the prediction module to the version, and will allow us to separately maintain revision control of that code. However, the code itself will not be a separate binary.
FOSS	General	Since FOSS distributes instruments worldwide, having NTEP and OIML requirements the same would be beneficial. I know efforts are being made to have the 2 as similar as possible. A concern is the potential that software code that is adopted would invalidate the currently approved instruments. A preferred outcome would be that once software code is adopted, only instruments seeking approval (not currently approved) would be required to meet the code.	

In addition, manufacturers that attended the August 2013 Grain Analyzer Meeting, expressed an interest in attending the next 2014 Software Sector meeting to provide additional input.

It was noted in the 2014 S&T annual report that Developing item 310-1 G-S.1. Identification was not considered at the 2013 GA sector meeting, the sector considered this item at previous sector meetings, but it was noted that the software sector was still developing this item and that the sector would provide additional feedback following further development. At the 2013 GA Sector meeting the sector was asked to provide comments to proposed changes to Publication 14.

At the 2014 GA Sector Meeting, Jim Truex will provide an update on the Software Sector activities and the status of Developing Item 310-1 G-S.1. Identification. GA sector member are requested to provide any additional feedback concerning the software sector's proposed changes to publication 14.

At the August 2014 Grain Analyzer sector meeting manufacturers discussed the Software Sectors proposal for changes to Publication 14 for identification of certified software, Software Protection/Security, and Software Maintenance and Reconfiguration. One manufacturer noted the difficulty in separating metrological and non-metrological software. It was noted that if the software is not separated then all software would be considered metrological. The Grain Analyzer sector had additional questions and made additional comments to the proposed changes to publication 14 for identification of certified software, software protection/security, and software maintenance and reconfiguration:

- If the software is not separated, would a manufacturer be required to resubmit the device to NTEP each year for reevaluation?
- Will the requirements for software affect devices that are currently designed and manufactured?
- There are issues with software changes if devices that are already manufactured are required to meet the software requirements.
- It is difficult to redesign devices.

The grain analyzer sector was informed that the Software Sector meeting would be held August 27-28, 2014. Manufacturers expressed that they needed the requirements so that these requirements can be considered in future device designs.

11. Update on Proficiency Testing

Source:
Dr. Hurburgh, Iowa State University

Purpose:
Develop an air-oven proficiency testing program to ensure state laboratory and manufacturer's air-oven measurements are traceable to the official USDA, GIPSA air-oven measurements.

Item under Consideration:
Update on progress of the ongoing air-oven proficiency testing program for states maintaining a grain moisture laboratory and GMM manufacturers.

Background / Discussion:
At the 2009 NTETC Grain Analyzer Sector Meeting Dr. Hurburgh, Iowa State University, urged the representatives from the American Oil Chemists Society (AOCS) to prepare a proposal so that the collaborative (air-oven) study could be conducted on an on-going basis rather than on an ad hoc basis. He cautioned that the proposal would have to include corn and wheat as well as soybeans.

At the 2011 NTETC Grain Analyzer Sector Meeting, Ms. Johnson, AOCS, proposed an air-oven/GMM proficiency testing series designed specifically to address the needs of GMM manufacturers and states maintaining a grain moisture laboratory. AOCS would administer the program, oversee distribution of samples, compile results,

perform statistical analysis of results, and distribute a report to participants. AOCS does not collect the samples. This is subcontracted to suitable providers. AOCS does not have laboratories. Since GIPSA/ FGIS is a certified laboratory already participating in the AOCS Soybean Quality Traits program, GIPSA air-oven results could be reported for comparison.

At the sector's August 2012 meeting the sector learned that Ms. Christine Atkinson will be taking over the Proficiency Testing program for States and interested manufacturers formerly headed by Ms. Amy Johnson. Ms. Atkinson verified that participant's cost will remain $100 per year. The sector reiterated that the program should focus solely on the standard FGIS air-oven method. Instrument results will not be reported. Participants' air-oven results will be compared against GIPSA's standard FGIS air-oven results. In response to Ms. Atkinson's question about scheduling, the sector was in general agreement that samples should ship after harvest, preferably between mid-January and mid-February with participants' results due 30 days after the shipping date.

The sector agreed upon the following Program Details:

Samples – Soybeans 2, Corn 2, Hard Red Winter Wheat 2

- Cost to Participants - $100.00/year
- Schedule:
  - Samples (6) ship between January 15 and February 15.
  - Samples must be tested within 5 business days of receipt with results due 30 days after the shipping date.
- Reports to be posted on www.SoybeanQualityTraits.org by 1 May.
- Only the GIPSA oven results will be identified. Individual manufacturer's and State participant's oven results will be assigned an identifier known only to the manufacturer or State participant. Instrument results will not be reported.
- Detailed Participant Instructions will be provided to each participant.

At the August 2013 Grain Analyzer Sector meeting no report was provided on AOAC's efforts to conduct proficiency testing for grain moisture. Karl Cunningham, IL and Kevin Hanson, MO agreed to work together to conduct a grain moisture proficiency test. Karl Cunningham, IL, agreed to provide the samples for proficiency testing and Kevin Hanson, MO, agreed to analyze the data in accordance with the procedures used to conduct proficiency testing in the State laboratory program. Kevin also agreed to collect data on test weight per bushel which may be useful in field test procedures for evaluating test weight per bushel on instruments. Following the August 2013 sector meeting arrangements were made for shipping grain samples to State participants.

At the August 2014 Grain Analyzer Sector meeting Mr. Karl Cunningham provide an update on the status of proficiency testing. Mr. Cunningham informed the Grain Analyzer Sector that he collected some wheat grain samples that can be used for grain moisture proficiency testing and that corn and soybeans will be collected during the 2014 harvest. Mr. Cunningham noted that after January 2015 wheat, corn and soybeans grain samples may be ready for distribution to the participating States. Mr. Cunningham agreed to analyze the data in cooperation with NIST and requested a list of contact information for participating States and other interested parties.

12. The Feasibility of a Phase II program for Near Infrared Grain Analyzers

Source:
Dr. Hurburgh, Iowa State University

Background/Discussion:
The GIPSA Grain Inspection Advisory Committee recommends that GIPSA initiate research to determine the feasibility of extending the theory of "equivalency" to multiple-constituent instruments in order to utilize standardized technology while maintaining accuracy and consistency in measurement of wheat protein.

Ms. Eigenmann provided an update on the Grain Inspection Advisory Committee's Resolutions. The Sector discuss the feasibility of an ongoing calibration program also referred to as a Phase II program for Near Infrared Grain Analyzers (NIR) instruments that measure wheat program. The Phase II program for grain moisture is a program that monitors the moisture calibrations on grain moisture meters annually. As changes to the calibrations occur due to grains, climate, etc., data collected in this program allows for changes to moisture calibrations annually and ensure equivalency among the different moisture meter models. The Advisory committee is recommending that this program be extended to include NIR instruments that measure wheat protein. It was noted that there could be multiple NIR instruments for wheat protein introduced into the market and that it may be advisable to have the Phase II program extended to NIR instruments that measure wheat protein. It was also mentioned that currently there are few States that are checking wheat protein on multi-constituent instruments.

GIPSA currently has an annual review program for the official protein system but would have to consider the cost associated with extending the program for other NIR wheat protein analyzers. It was noted during the discussion that GIPSA currently has hourly rate fees set that could be applied to a phase II program for wheat program.

Unlike moisture where there may be changes to the calibrations annually, there will not be year to year changes for wheat protein. As such, consideration may be given to conducting the program less than annually, and considering reviewing wheat protein calibrations every 3, 4, or 5 years, as appropriate. In addition it was noted that there also has to be a mechanism to get manufacturers calibration data for calibration review.

The sector will continue to discuss the feasibility of a phase II program for wheat protein giving consideration to the following issues:

- How the program will be funded,
- How often the calibrations for wheat protein will be updated,
- How many devices are currently being used in commercial transactions, and
- If being used commercially in a State, what is needed by States to begin testing these devices?

At the August 2014 Grain Analyzer Sector meeting USDA, GIPSA representatives provided an update on the activities concerning a phase II program for wheat protein. The Sector was informed that USDA, GIPSA is discussing funding options for this program. It was noted that the frequency of calibration for wheat protein is being considered and that this will impact the cost of the program. The Sector was also informed that Dr. David Funk is writing a discussion paper that will address many of the issues concerning a Phase II program for wheat protein.

13. Next Sector Meeting

The next meeting is tentatively planned for Wednesday, August 19 and Thursday, August 20, 2015, at the Chase Suites by Woodfin at KCI in Kansas City, MO. Sector members are asked to hold these days open pending confirmation of availability of facility, determination of agenda items, exact meeting times, and meeting duration. Final meeting details will be announced by early June 2015.

If you would like to submit an agenda item for the 2015 meeting, please contact any of the following persons by June 1, 2014:

Jim Truex, NTEP Administrator at jim.truex@ncwm.net
G. Diane Lee, NIST Technical Advisor, at diane.lee@nist.gov

At the August 2014 Grain Analyzer Sector meeting, the sector discussed the proposed dates and location for the August 2015 Grain Analyzer Sector Meeting. It was noted during the discussion that the Sector may consider holding a web meeting, depending on the number of sector items that are received. Following the August 2014 meeting the NCWM, Inc. posted a list of the 2015 Sector meetings on their web site. The August 2015 Grain Analyzer Sector meeting is scheduled for August 19 – 20, 2015 as a live web meeting.

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