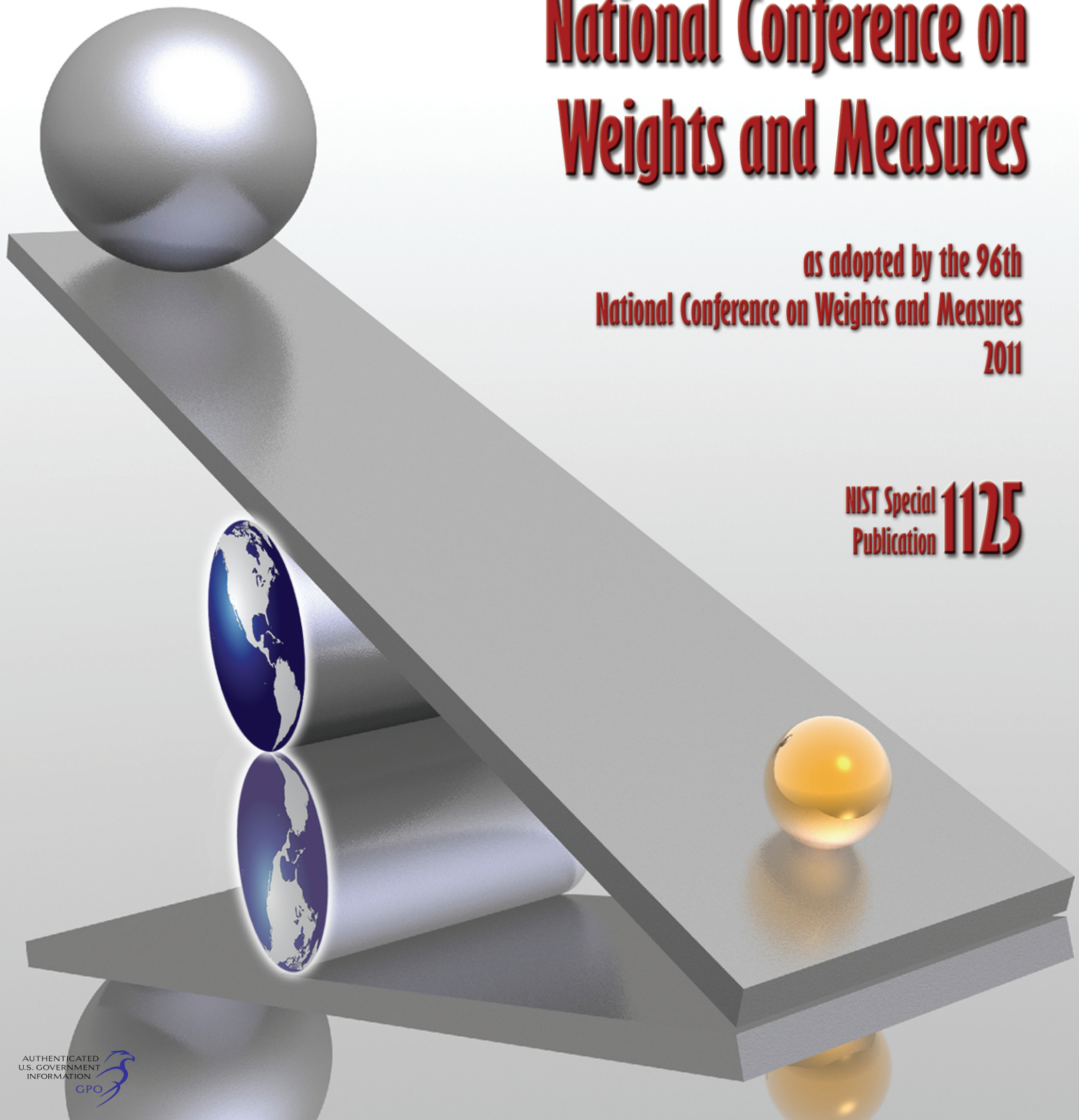
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Report of the 96th National Conference on Weights and Measures

as adopted by the 96th
National Conference on Weights and Measures
2011

NIST Special Publication 1125



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Report of the 96th National Conference on Weights and Measures

Missoula, Montana – July 17 through 21, 2011
as adopted by the 96th National Conference on Weights and Measures 2011

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NIST Special Publication 1125
November 2011

The National Conference on Weights and Measures is supported by the National Institute of Standards and Technology and is attended by officials from various states, counties, and cities, as well as representatives from the U.S. Government, other nations, industry, and consumer organizations.

Abstract

The 96th Annual Meeting of the National Conference on Weights and Measures (NCWM) was held July 17 - 21, 2011, at the Holiday Inn Downtown at the Park, Missoula, Montana. The theme of the meeting was "Educating Today for Tomorrow."

Reports by the NCWM Board of Directors, Standing Committees, and Special Purpose Committees constitute the major portion of this publication, along with the addresses delivered by Conference officials and other authorities from government and industry.

Special meetings included those of the Scale Manufacturers Association, Meter Manufacturers Association, Gasoline Pump Manufacturers Association, American Petroleum Institute, National Association of State Departments of Agriculture, tand Associate Membership Committee.

Key words: laws and regulations; legal metrology; meters; scales; specifications and tolerances; training; type evaluation; uniform laws; weights and measures.

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WASHINGTON: 2011

National Conference on Weights and Measures

Annual Report of the 96th NCMW

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Past Chairmen of the Conference

44th	1959	C. M. Fuller, CA
45th	1960	H. E. Crawford, FL
46th	1961	R. E. Meek, IN
47th	1962	Robert Williams, NY
48th	1963	C. H. Stender, SC
49th	1964	D. M. Turnbull, WA
50th	1965	V. D. Campbell, OH
51st	1966	J. F. True, KS
52nd	1967	J. E. Bowen, MA
53rd	1968	C. C. Morgan, IN
54th	1969	S. H. Christie, NJ
55th	1970	R. W. Searles, OH
56th	1971	M. Jennings, TN
57th	1972	E. H. Black, CA
58th	1973	George L. Johnson, KY
59th	1974	John H. Lewis, WA
60th	1975	Sydney D. Andrews, FL
61st	1976	Richard L. Thompson, MD
62nd	1977	Earl Prideaux, CO
63rd	1978	James F. Lyles, VA
64th	1979	Kendrick J. Simila, OR
65th	1980	Charles H. Vincent, TX
66th	1981	Edward H. Stadolnik, MA
67th	1982	Edward C. Heffron, MI
68th	1983	Charles H. Greene, NM
69th	1984	Sam F. Hindsman, AR
70th	1985	Ezio F. Delfino, CA
71st	1986	George E. Mattimoe, HI
72nd	1987	Frank C. Nagele, MI
73rd	1988	Darrell A. Guensler, CA
74th	1989	John J. Bartfai, NY
75th	1990	Fred A. Gerk, NM
76th	1991	N. David Smith, NC
77th	1992	Sidney A. Colbrook, IL
78th	1993	Allan M. Nelson, CT
79th	1994	Thomas F. Geiler, MA
80th	1995	James C. Truex, OH
81st	1996	Charles A. Gardner, NY
82nd	1997	Barbara J. Bloch, CA
83rd	1998	Steven A. Malone, NE
84th	1999	Aves D. Thompson, AK
85th	2000	G. Weston Diggs, VA
86th	2001	Lou Straub, MD
87th	2002	Ron Murdock, NC
88th	2003	Ross J. Andersen, NY
89th	2004	Dennis Ehrhart, AZ
90th	2005	G. Weston Diggs, VA
91st	2006	Don Onwiler, NE
92nd	2007	Michael Cleary, CA
93rd	2008	Judy Cardin, WI
94th	2009	Jack Kane, MT
95th	2010	Randy Jennings, TN

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2010 - 2011 Organizational Chart

NCWM Board of Directors

OFFICE	NAME	AFFILIATION	TERM ENDS
Chairman	Tim Tyson	Kansas	2011
Chairman-Elect	Kurt Floren	Los Angeles County, California	2011
NTEP Committee Chair	Randy Jennings	Tennessee	2011
Treasurer	Judy Cardin	Wisconsin	2011
Active Membership - Western	Brett Saum	San Luis Obispo County, California	2012
Active Membership - Central	Ronald Hayes	Missouri	2015
Active Membership - Southern	Stephen Benjamin	North Carolina	2013
Active Membership - Northeastern	Michael Sikula	New York	2014
At-Large	Mark Coyne	City of Brockton, Massachusetts	2011
At-Large	Stephen Langford	Cardinal Scale Manufacturing, Co.	2013
Associate Membership	Gordon Johnson	Gilbarco, Inc.	2013
Honorary NCWM President	Dr. Patrick D. Gallagher	NIST, Director	NA
Executive Secretary	Carol Hockert	NIST, Weights and Measures Division	NA
Executive Director	Don Onwiler	NCWM Headquarters	NA
Board of Directors Advisor	Gilles Vinet	Measurement Canada	NA
NTEP Administrator	Jim Truex	NCWM Headquarters	NA

National Type Evaluation Program Committee (NTEP)

OFFICE	NAME	AFFILIATION	TERM ENDS
Committee Chair	Randy Jennings	Tennessee	2011
Member	Tim Tyson	Kansas	2012
Member	Brett Saum	San Luis Obispo County, California	2012
Member	Kurt Floren	Los Angeles County, California	2013
Member	Michael Sikula	New York	2014
NTEP Administrator	Jim Truex	NCWM Headquarters	NA

Finance Committee

OFFICE	NAME	AFFILIATION	TERM ENDS
Committee Chair	Kurt Floren	Los Angeles County, California	2012
Member	Stephen Benjamin	North Carolina	2013
Member	Judy Cardin	Wisconsin	2011
Member	Gordon Johnson	Gilbarco, Inc.	2013
Executive Director	Don Onwiler	NCWM Headquarters	NA

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OFFICE	NAME	AFFILIATION	TERM ENDS
Committee Chair	John Gaccione	Westchester County, New York	2012
Member	Joe Benavides	Texas	2011
Member	Jonelle Brent	Illinois	2013
Member	Raymond Johnson	New Mexico	2014
Member	Tim Lloyd	Montana	2015
Associate Membership Representative	Rob Underwood	Petroleum Marketers Association of America	2013
Canadian Technical Advisor	Lance Robertson	Measurement Canada	NA
NIST Technical Advisor	David Sefcik	NIST, Weights and Measures Division	NA
NIST Technical Advisor	Lisa Warfield	NIST, Weights and Measures Division	NA

Professional Development Committee (PDC)

OFFICE	NAME	AFFILIATION	TERM ENDS
Committee Chair	Stacy Carlsen	Marin County, California	2012
Member	Vacant		2011
Member	Julie Quinn	Minnesota	2013
Member	Dale Saunders	Virginia	2014
Member	Cheryl Ayer	New Hampshire	2015
Associate Membership Representative	Steven Grabski	Wal-Mart Stores, Inc.	2013
Safety Liaison	Vacant		
NIST Technical Advisor	Vacant		

Specifications and Tolerances Committee (S&T)

OFFICE	NAME	AFFILIATION	TERM ENDS
Committee Chair	Steve Giguere	Maine	2012
Member	Douglas Deiman	Alaska	2011
Member	Kenneth Ramsburg	Maryland	2013
Member	Paul Moyer	Nebraska	2014
Member	Brett Gurney	Utah	2015
Canadian Technical Advisor	Ted Kingsbury	Measurement Canada	NA
NIST Technical Advisor	Tina Butcher	NIST, Weights and Measures Division	NA
NIST Technical Advisor	Rick Harshman	NIST, Weights and Measures Division	NA

Nominating Committee

OFFICE	NAME	AFFILIATION	TERM ENDS
Committee Chair	Randy Jennings	Tennessee	2011
Member	Judy Cardin	Wisconsin	2011
Member	Charles Carroll	Massachusetts	2011
Member	Thomas Geiler	Barnstable Regulatory Services, Massachusetts	2011
Member	Joe Gomez	New Mexico	2011
Member	Maxwell Gray	Florida	2011
Member	Steven Malone	Nebraska	2011

Credentials Committee

OFFICE	NAME	AFFILIATION	TERM ENDS
Committee Chair	James (Steve) Hadder	Florida	2011
Member	Richard Lewis	Georgia	2012
Member	Mahesh Albuquerque	Colorado	2013
Coordinator	Tom Geiler	Barnstable Regulatory Services,, Massachusetts	2013

Appointive Officials

OFFICE	NAME	AFFILIATION	TERM ENDS
Chaplain	Stephen Langford	Cardinal Scale Manufacturing, Co.	2011
Parliamentarian	Louis Straub	Fairbanks Scale, Inc.	2011
Presiding Officer	Nicholas Brechun	Colorado	2011
Presiding Officer	Tim Chesser	Arkansas	2011
Presiding Officer	Maureen Henzler	Kansas	2011
Presiding Officer	Jack Walsh	Town of Wellesley, Massachusetts	2011
Sergeants-at-Arms	Randy Jones	Montana	2011
Sergeants-at-Arms	Don Reimer	Montana	2011

Associate Membership Committee

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Chair	Robert Murnane, Jr.	Seraphin Test Measure	2011
Vice Chair	Christopher Guay	Procter and Gamble, Co.	2011
Secretary / Treasurer	Darrell Flocken	Mettler-Toledo, Inc.	2011
Member	Kathleen Madaras	Fuel Merchants Association of New Jersey	2011
Member	Paul Hoar	AgriFuels, LLC/NBB	2012
Member	Darrell Flocken	Mettler-Toledo, Inc.	2013
Member	Michael Gaspers	Farmland Foods, Inc.	2013
Member	Paul A. Lewis, Sr.	Rice Lake Weighing Systems, Inc.	2013
Member	Robert Murnane, Jr.	Seraphin Test Measure	2014
Member	Steven Grabski	Wal-Mart Stores, Inc.	2014
Member	Christopher Guay	Procter and Gamble, Co.	2015
Member	Thomas McGee	PMP Corporation	2015
Member	Rob Underwood	Petroleum Marketers Association of America	2015

NTETC Belt-Conveyor Sector		
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Chair	Bill Ripka	Thermo Fisher Scientific
Technical Advisor	John Barton	NIST, Weights and Measures Division
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Public Sector Member	Ken Jones	California
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Private Sector Member	Lars Marmsater	Merrick Industries, Inc.
Private Sector Member	Peter Sirrico	Thayer Scale/Hyer Industries
Private Sector Member	Thomas Vormittag	

NTETC Grain Analyzer Sector		
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Technical Advisor	G. Diane Lee	NIST, Weights and Measures Division
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Private Sector Member	James Bair	North American Miller's Association
Private Sector Member	Martin Clements	The Steinlite Corporation
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Private Sector Member	Jess McCluer	National Grain and Feed Association
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Public Sector Member	James (Steve) Hadder	Florida
Public Sector Member	Dan Reiswig	California
Private Sector Member	Steve Bar	Bennett Pump Company
Private Sector Member	William (Rodney) Cooper	Tuthill Transfer Systems
Private Sector Member	Mike Gallo	Cleanfuel USA
Private Sector Member	Paul Glowacki	Murray Equipment, Inc.
Private Sector Member	Gordon Johnson	Gilbarco, Inc.
Private Sector Member	Dmitri Karimov	Liquid Controls
Private Sector Member	Yefim Katselnik	Dresser Wayne
Private Sector Member	Douglas Long	RDM Industrial Electronics
Private Sector Member	Andrew MacAllister	Daniel Measurement and Control
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Private Sector Member	Andre Noel	Neptune Technology Group, Inc.
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Private Sector Member	Johnny Parrish	Brodie International
Private Sector Member	Richard Tucker	RL Tucker Consulting, LLC
Private Sector Member	Kelly White	Itron, Inc.

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Co-Chair	James Pettinato	FMC Technologies Measurement Solutions, Inc.
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Public Sector Member	Dennis Beattie	Measurement Canada
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Public Sector Member	Edward Payne	Maryland
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Private Sector Member	Kevin Detert	Avery Weigh-Tronix
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Private Sector Member	Andre Elle	Endress + Hauser Flowtec AG
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Private Sector Member	Keith Harper	Gencor Industries, Inc.
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Private Sector Member	Paul A. Lewis, Sr.	Rice Lake Weighing Systems, Inc.
Private Sector Member	Rick Lydon	Sick, Inc.
Private Sector Member	Michael McGhee	Itron, Inc.
Private Sector Member	Richard Miller	FMC Technologies Measurement Solutions, Inc.
Private Sector Member	Michael Parks	Vulcan Materials Company
Private Sector Member	Mike Roach	VeriFone
Private Sector Member	Robin Sax	CompuWeigh Corporation
Private Sector Member	Chris Scott	Gilbarco, Inc.
Private Sector Member	Scott Szurek	Emerson Process Management
Private Sector Member	David Vande Berg	Vande Berg Scales

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Public Sector Member	William Bates	USDA, GIPSA, FGIS
Public Sector Member	Luciano Burtini	Measurement Canada
Public Sector Member	Tina Butcher	NIST, Weights and Measures Division
Public Sector Member	Terry Davis	Kansas
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Public Sector Member	Ken Jones	California
Public Sector Member	Jack Kane	Montana
Public Sector Member	Edward Payne	Maryland
Public Sector Member	Dan Reiswig	California
Public Sector Member	Juana Williams	NIST, Weights and Measures Division
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Private Sector Member	Neil Copley	Thurman Scale Co.
Private Sector Member	Mitchell Eyles	Flintec, Inc.
Private Sector Member	Robert Feezor	Scales Consulting and Testing
Private Sector Member	Scott Henry	NCR Corporation
Private Sector Member	Sam Jalahej	Totalcomp, Inc.
Private Sector Member	Rafael Jimenez	Association of American Railroads Transportation Technology Center, Inc.
Private Sector Member	Stephen Langford	Cardinal Scale Manufacturing, Co.
Private Sector Member	Paul A. Lewis, Sr.	Rice Lake Weighing Systems, Inc.
Private Sector Member	L. Edward Luthy	Stock Equipment Company/Schenck Process Transport N.A.
Private Sector Member	Nigel Mills	Hobart Corporation
Private Sector Member	Louis Straub	Fairbanks Scales, Inc.
Private Sector Member	Jerry Wang	A&D Engineering, Inc.
Private Sector Member	Walter Young	Emery Winslow Scale Company

Western Weights and Measures Association (WWMA) www.westernwma.org					
States	Alaska	Colorado	Montana	Oregon	Wyoming
	Arizona	Hawaii	Nevada	Utah	
	California	Idaho	New Mexico	Washington	
Contact	Kristin Macey California Department of Food and Agriculture			(916) 653-6649 kmacey@cdfa.ca.gov	
Annual Meeting	Date: September 25 - 29, 2011			San Luis Obispo, California	

Central Weights and Measures Association (CWMA) www.cwma.net				
States	Illinois	Kansas	Missouri	Ohio
	Indiana	Michigan	Nebraska	South Dakota
	Iowa	Minnesota	North Dakota	Wisconsin
Contact	Vicky Dempsey Montgomery County Weights and Measures			(937) 225-6309 dempseyv@mcohio.org
Annual Meeting	May 16 - 19, 2011			Grand Rapids, Michigan
Interim Meeting	September 12 - 15, 2011			Cedar Rapids, Iowa

Southern Weights and Measures Association (SWMA) www.swma.org					
States	Alabama	Florida	Maryland	South Carolina	Virginia
	Arkansas	Georgia	Mississippi	Tennessee	West Virginia
	Delaware	Kentucky	North Carolina	Texas	
	District of Columbia	Louisiana	Oklahoma	U.S. Virgin Islands	
Contact	Stephen Benjamin North Carolina Department of Agriculture			(919) 733-3313 steve.benjamin@ncagr.gov	
Annual Meeting	Date: October 23 - 26, 2011			Norfolk, Virginia	

Northeastern Weights and Measures Association (NWMA) www.newma.us				
States	Connecticut	New Hampshire	Pennsylvania	Puerto Rico
	Maine	New Jersey	Rhode Island	
	Massachusetts	New York	Vermont	
Contact	James Cassidy City of Cambridge Weights and Measures Dept.			(617) 349-6133 jcassidy@cambridgema.gov
Annual Meeting	May 9 - 12, 2011			Saratoga Springs, New York
Interim Meeting	October 12 - 13, 2011			Norwich, Connecticut

Welcoming Address
National Conference on Weights and Measures

Missoula, Montana
July 19, 2011

Jack Kane
Administrator, Montana Department of Labor and Industry, Business Standards Division
Helena, Montana

Good morning and welcome to Montana.

For those of you who know me, that is something I've been wanting to say for quite some time. Since my first Conference in 1995, I have been very fortunate to have had the opportunity to attend conferences located throughout the United States; coast to coast, border to border and then some. And all along, I hoped that one year we would hold a conference in Montana so I could share my state with you, as so many of you have done when your state was chosen as the conference site.

In considering what I should address in this welcome speech, I turned to the Conference agenda and looked at the items on the agenda and wondered, "What were the issues of the day at those first Conferences held almost 100 years ago?" For that matter, "Who was Montana's representative, and, to what extent, did Weights and Measures even exist back in the "olden times" as my kids refer to anything that happened over 20 years ago?"

Pulling out my copy of the NIST CD of Weights and Measures Conferences starting in 1905, I first found reference to a Mr. A.N. Yoder, Secretary of State and Deputy Sealer for the State of Montana in the Third Conference in 1907. During those first Conferences, the protocol was for the state sealers (all fourteen or fifteen of them in attendance) to make a report to the Chairman on their states' involvement in weights and measures.

A.N., being the new guy that year, got to go first, and I'm sure he really wowed them when he started his report by stating, "Montana has so far not paid attention to the standards of weights and measures and while we have laws on the books, they are not enforced."

Well, okay, I guess if you're going to start a program, zero is as a good place to start as any!

A.N. then went on to inform the Conference that Montana had no standards and wondered how to go about getting them. Mr. L.A. Fischer, Chief Weights and Measures Division, National Bureau of Standards assured him that they would be provided. A.N. apparently a man of few words then allowed he had spoken his piece and would prefer to listen and see what he could pick up in the forthcoming discussions. A.N. didn't make it to the 1908 Conference, the Montana legislature met at the same time, and as Secretary of State, he was required to be in attendance. There was no Conference in 1909; however, he did make the 1910 Conference where he once again brought up the fact that he had no standards to work with, and in addition to a balance and mass standards, he would also like some liquid standards as he did not believe that "there is a milk bottle in the State of Montana that holds an honest quart or pint."

At this Conference A.N. was also assigned to a committee to prepare a net weight packaging bill to present to Congress. Well, that's one thing that hasn't changed in this outfit, if you speak up on some subject, sure enough; you're going to get appointed to a committee. How A.N.'s participation in this came out we don't know as he died after returning from the Conference. We do know, however, that the state did receive the standards as they currently reside in our lab in Helena.

Interesting aside, his replacement was named Swindlehorst. Reminds me of the Accounting firm of Dewey, Cheatem, and Howe.

While some things, such as committee assignments and dedication to the cause, have been in place for years, other things change. For example, in the committee report under "answers to questions," which I assume to be the precursor to our current standing committee agendas, the topics included; bottomless measures, counter tacks, wooden dishes, testing of railroad scales, and sale of ice. In the early part of the twentieth century, ice was used as the primary refrigerant in residential households, and I can imagine that getting the ice you paid for truly was a big issue. Do you suppose that using the concept of "moisture loss" to explain why the eight-pound chunk ordered was now a three-pound piece was effective when the deliveryman was confronted by an angry housewife?

Reviewing this Conference's agenda items shows the same type of issues, net contents and scale testing, that those early Deputy Sealers dealt with, just at a different level. For example, in 1910 one of the items on the "answers to questions" agenda was promoting a uniform rail scale test. Here we are in 2011 still talking weighing systems but now it's time dependence and creep of load cells.

Some things have changed in Montana as well; from a population of 500 000 in A.N.'s day to almost a million today; from no program in 1910 to what I feel is a pretty darn effective program in 2011. We currently have nine field inspectors covering the entire state and specializing in all facets of inspection and testing. These nine inspectors test on an annual basis about 16 000 pumps and meters and around 7500 scales, over 500 of which are stock scales with quite a few truck, rail, and belt scales as befitting a state which produces timber, coal, cattle, and small grains. The average inspector (and ours are all above average) travels around 33 500 miles a year to get all of his inspections done. Now, I know some of you from more densely populated regions wonder what these guys do the other half of the year with only 16 000 pumps and meters. Well, when you consider that the inspection area for one inspector on the eastern border is over 50 000 square miles, perspectives change.

Holding the National Conference in Montana is a unique event and as such Tim Lloyd, the Bureau Chief, and I thought that it would be a good idea to invite the staff. At this time, I would like to introduce them and ask that they stand when their name is called out.

- Carol Larkin: Licensing technician and truly the person who makes things go so smoothly.
- Don Reimer: Inspector from Helena
- Fred Steinbacher: Inspector from Billings
- Rick Czech: Inspector from Great Falls
- Randy Griswold: Inspector from Kallispel
- Tim Stephens: Inspector from the Three Forks area
- Mike Kuntz: Inspector from Billings
- Randy Jones: Inspector from south of here in the Hamilton area

Additionally, I'd like to introduce a former inspector who is in attendance, Al Page from Billings. All of these folks are intimately knowledgeable about their areas and other parts of Montana; so, if you have any questions about things to see, or places to go, they would be a good source of information.

I know a lot of you have already taken some side trips around Missoula, up to Glacier, etc., and I sure hope you all take advantage of this location to get out and see some of Montana before you go home.

With getting out in mind, I'd like to offer a few suggestions when hiking in bear country. Take a friend or two, if you get in a jam, it's always nice to have someone along who can help out. Wear appropriate footwear. Forget about your big, waterproof, deep lugged heavy hiking boots. Think running shoes. When the bear is charging at you and your buddies, you need to move. I know, I know, you can't outrun a bear, but you don't have to as long as you can out run your ex-friends!

Again, welcome to Montana. Welcome to my home.

President's Address
National Conference on Weights and Measures

Missoula, Montana
July 19, 2011

Dr. Charles H. Romine
Acting Associate Director for Laboratory Programs/Principal Deputy, NIST

- Welcome and thank you for having me.
- I would like to personally thank the NCWM Chairman, Tim Tyson, the Executive Director, Don Onwiler, and the Chair elect, Kurt Floren.
- Also, thanks to those of you from Montana for hosting this meeting.
- My first exposure to weights and measures came at an early age when my mother began selling milk paint in the 1950s.
- For those of you who may have never heard of milk paint, it is, as its name suggests, a kind of paint that is made with milk, as well as lime and earth pigments, such as crushed rock or clay .
- Having been in use for more than 20,000 years, milk paint is the oldest paint known (cave paintings and Tutankhamen's tomb and the objects therein were painted with milk paint).
- My mother got a call from a weights and measures official who came out to calibrate the antique scale that she was using to measure her milk paint, which she sold by weight.
- The official checked the scale using standard weights, tinkered with it for a bit, and certified it as accurate.
- From then on, my mother could assure her customers that she was not shortchanging them, and she could assure herself that she wasn't giving away her product.
- This story illustrates the fact that both consumers and businesses benefit from accurate, uniform weights and measures.
- Weights and measures are essential for fair commerce and securing uniformity in weights and measures laws and application is a core mission of NIST.
- Ensuring uniformity of weights and measures in the United States is of course one of the primary reasons NIST was founded in the first place.
- As you are no doubt aware, the weights and measures regulatory system suffers from a visibility problem.
    - So long as you are doing your job well, no one notices, and public support wanes.
    - Waning public support leads to cuts in funding.
    - Cuts in funding leads to lack of enforcement.
    - Lack of enforcement leads to degradation of uniformity at best, and thumbs on the scale at worst.
    - Eventually, this is discovered, funding follows public outcry, you do your jobs well, everyone forgets again, and the cycle repeats.
- NIST knows this all too well, as we have a mission that few understand or appreciate until something goes wrong.
- I am here, in part, to reconfirm our unwavering support of your work.
- We cannot give you money to run your program, but we can work with the NCWM to help you devise methods for measuring the impact of your work. We commit to providing the training and technical expertise you need, and to delivering it by the means and methods that are most useful to you.
- We applaud NCWM on the development of its new certification program.
- Such credentialing only serves to bolster the professionalism of weights and measures enforcement.

- We at NIST are devoting increased attention to our training program, and we believe the link between training and certification is critical to the success of either.
- Great opportunity between our organizations exists to further the missions of both.
- And, we fully support NCWM on the recent decision to take over the responsibility for putting out Publications 15 and 16.
    - The successful transition of publication responsibility will be a result of the cooperative relationship that we have been building.
    - NCWM's assumption of this responsibility will also give us at NIST more time to do the things that we do best: providing technical expertise and advice, training, and developing an ever expanding and accessible set of resources i.e., workshops, webinars, and other online training.
- Our recent reorganization served to put NIST back on a mission-focused footing.
- Naturally, this means that weights and measures has risen to a place of prominence within the organization, and rightfully so.
- In this time of tumultuous technological change, we must remember that weights and measures is not merely about maintaining uniformity, but about keeping things the same.
    - New technologies present us with a host of new challenges; device specifications, methods of sale of new products, maintaining and increasing needed skills.
    - The setting of the regulations debated on the floor of this Conference provides order and empowers consumers to make value comparisons.
    - For instance, at long last the electric car is a reality.
    - Charging stations are appearing on our streets and before too long they will likely be as common as parking meters. In fact, those two technologies may very well merge at some point.
    - But before that can happen, we have to decide how the electricity will be metered and sold
    - Here, the efforts of NCWM, NIST, state weights and measures officials, and industry to come to a consensus that serves the interests of all is vital.
- Likewise, so much commerce today relies on technologies that are hidden.
    - The gas pumps of yesterday were mechanical, they had mechanical flow meters that could be checked for accuracy quite easily.
    - The gas pumps of today are complicated computerized devices that perform dozens of functions from the dispensation of gas to the dispensation of free car washes.
    - Computerized control, of course, depends on software.
    - How do we ensure that the software is working properly and that it hasn't been tampered with or programmed to overcharge, say, every third customer?

    We need new tools, new capabilities to cope with this onslaught of change if we are to maintain consumer confidence and prove true the boast that America is the best place in the world to do business.

- Thank you for having me.
- Questions from the audience?
- Happy to talk with individuals during breaks, etc.

Chairman's Address
96th National Conference on Weights and Measures

Missoula, Montana
July 19, 2011

Mr. Tim Tyson
Director of Weights and Measures, Kansas Department of Agriculture
Topeka, Kansas

I hope everyone has been able to get out and see some of the beautiful sites around Missoula. Sunday evening my wife and niece talked me into hiking up the hill to the M. I don't think what I did was considered hiking. I made it, and next week I may need by-pass surgery. I know Tim Chesser saw more sites than he wanted. Tim was able to safely elude a grizzly in Glacier Park. I have tried to find the YouTube video of Tim running from the bear, but haven't found it yet; I even tried searching on "Arkansas Redneck mauls bear in Glacier Park." If we find it, we will show it. On a serious note, we are thankful Tim survived.

In the last newsletter, I talked about Weights and Measures being the silent third partner in every transaction. Everyday our inspectors go out and test scales and gas pumps; they test packages and do price verifications. They also may test propane meters, DEF dispensers, and mass flow meters that are measuring ag chemicals at the local co-op or they may be at pipeline testing meters. Whatever they are testing, our inspectors are ensuring that when a transaction occurs, the consumer and the device owner are both being treated equitably. Most of the time, no one notices.

Also, in the article, I wrote about the need to acquire and assemble data to show the impact we have on the marketplace when we can perform our duties and when we cannot. Do we have this data? No. I can tell you that when the State of Kansas started testing VTM's after a three-year layoff, that compliance rates were less than 50 %, and now, after two years they are at 90 % compliance. As an organization, we need to compile these instances and put dollar amounts to them.

I would like to share some analysis that I have done. In Kansas, we produce about 224.4 million bushels of sorghum, 369.6 million bushels of wheat, 595.3 million bushels of corn, and 160.6 million bushels of soybeans. At current, cash grain prices are $6.50 for sorghum, $7 for wheat, $7 for corn, and $13.75 for soybeans; Kansas produces $10.4 billion worth of grain. That is just in those four grains. Now let's assume that our analysis shows that after testing all of our grain scales that on a bell curve our median error is zero. If we change that bell curve and now our median is a −20 pounds, one division, we now have just reduced our economic value by $4.18 million dollars. That is $4.18 million dollars less that our producers don't get paid for.

Now let's look at fuel sales. Kansas sells about 3.3 billion gallons of fuel each year. If we again look at our bell curve of errors and our average error is zero, that 3.3 million gallons is worth $11.5 billion at $3.50 per gallon. I have looked at our bell curve and it does indeed have a median of zero. Now, if we again shift that bell curve to the left and now have a − 1 cubic inch median error then consumers just lost $10 million. In your state, that could be less or more depending on fuel prices and the amount of gallons sold.

These are the types of numbers that get people's attention. However, we have to be able to say what our bell curves are, and how they are impacted by inspection or how they are impacted by no inspections.

Every day we hear how the economy is getting better or not. The reality is that we all are struggling with budget cuts and reduced revenues. As states, we must find new ways of doing business and better ways of justifying our programs.

I cannot tell you when we will have better analysis for our programs; I can only tell you we must. I can tell you that it has been a humbling experience being your chairman over the past year; I thank you.

I now would like to call up Alan Johnston, President of Measurement Canada, for the signing of the Mutual Recognition Agreement (MRA) between our two Nations.

New Chairman's Address
96th National Conference on Weights and Measures

Missoula, Montana
July 21, 2011

Mr. Kurt Floren
Commissioner, Los Angeles County Department of Agriculture
Los Angeles, California

It is truly my honor to be entrusted with the role of Chairman of the National Conference on Weights and Measures. I'll admit, those words sound a bit odd to me as, with amazement, I think back twenty-six years, to 1985, when I first entered the field of weights and measures regulation as a new inspector, quickly finding that I did not have a clue of the vast array of issues that this work encompasses. I knew that gas pumps and grocery scales were regularly tested, but as fuel quality standards, scanner accuracy, package inspection, weighmaster enforcement, and all the, then, "new technology" of load cells and interfaced software programs came into view, I began to realize the immense diversity of this field and came to recognize the fact that weights and measures issues touch every consumer dozens, perhaps hundreds of times each day.

Since then, I have been blessed with opportunities to experience a broad array of weights and measures activities, from all manner of device, package, and label inspections to involvement in many major investigations involving overcharges through price scanners, multi-million dollar cases regarding underweight packaged goods, investigation of gas station operators defrauding consumers through electronic manipulation of fuel dispensers, and a host of other matters. My fascination with what we do has only grown.

Through my early years, as a field inspector and, later, as a young supervisor, I would receive my new Handbooks 44, 130, and 133, reading all of the amendments and, at times, wondering, "Who are the idiots who came up with this?" I attended my first NCWM meeting in 1994 in San Diego, catching my first glimpse of the incredible detail that was debated, the opposing views and opinions that were offered, and the dedication and passion of the stakeholders involved. That meeting quickly changed my opinions regarding any involvement of "idiocy" and opened my eyes to the many factors and considerations that go into developing such standards.

We here, engaged in the work of the Conference and in our duties and activities back home, readily recognize the importance of what we do. That's what keeps us involved, keeps us striving to meet our motto, "That Equity May Prevail." As a national standard-setting body, the work and focus of NCWM has undergone incredible changes and addressed an ever-widening array of challenges. We have continually stepped up to meet those challenges.

As we have all witnessed in these challenging times, many are facing cutbacks, reductions, hiring freezes, and the like. Again, all of us here fully recognize the importance of what we do. It is evidenced by the fact that we are at this Conference, have struggled to justify the expense, to take the time from the workloads that await us back at our offices, to study the issues and present our views. However, neither the public nor our state or local government leaders know enough of what we do, why we do it, and why it is so critical to the marketplaces, the consumers, and the competing businesses and manufacturers that we devote ourselves to protecting.

With that realization, the theme I have chosen for the coming year is: "Taking Measure of Our Worth."

This Conference has tackled so many issues through just the years that I have witnessed:

- As fuel dispensers and scales evolved from mechanical to electronic systems, security seals evolved from lead and wire devices to audit trails….
    - Yet, how many have the time and resources to regularly access and review audit trails?

- As price scanners grew in use, we developed the Examination Procedure for Price Verification…
  - But, how many jurisdictions have funding to routinely perform scanner inspections?

- We've developed standards and test procedures for Multiple Dimension Measuring Devices…
  - But, how many have been able to secure the funds to acquire test standards?

- We've continually revised Handbook 133 and remain struggling to address moisture loss…
  - Yet, how many jurisdictions daily, weekly, or monthly conduct package inspections?

- Now, we are witnessing the introduction of hydrogen fuel to the marketplace and have adopted a tentative code for testing dispensers with calibrated transfer standards…
  - How many will have resources to acquire the test equipment?...To absorb the workload?

- NCWM recently adopted revisions to tolerances and test procedures for water sub-meters. As I stand here, in spite of strong efforts to defeat it, a bill is steadily proceeding through California's Legislature to exempt water sub-meters from inspection by weights and measures officials.
  - One of the principal claims and arguments of the proponents, "Manufacturers do not face such regulation in most, if any, of the other 49 states."

In many cases, resource limitations and resulting forced prioritization of only select duties prevent many of us from undertaking these and other regulatory activities.

This body does great work, important work, and has done so for over 100 years. Together with our associate members, industry partners, and many stakeholders, we work diligently and passionately to develop appropriate, meaningful, effective standards and procedures for the benefit of all in the marketplace. But, if we don't have the resources to implement those procedures, to enforce the standards, and to monitor compliance in the marketplace, all the standards in the world have little meaning and limited impact. We need to do a better job in explaining our worth and that of the work we do.

All of us are pressed for time. No one wants more surveys to complete or data to process and report. But, as we address more emerging technologies, develop more and more standards, adopt ever more detailed procedures, we need to work together to ensure that we can carry them out, apply and enforce them in the field, and ensure the very uniformity that is NCWM's goal.

We need to tell our story – demonstrate the need – arm our legislators with the understanding and ammunition to go to battle for us, and secure the resources to sustain and enhance our work. We debate for hours over why certain requirements, tests, and standards are critical. But, few outside of those debates and discussions ever hear or ever have cause to know why it's all so important.

As regulatory officials, manufacturers, and retailers, our members measure a lot of commodities. We concern ourselves with how those commodities are marketed, ensuring accuracy in measurement and in providing sufficient information to facilitate value comparison.

The services that we provide to consumers, businesses, and device manufacturers, alike, are commodities…that must be marketed… that have a cost…that deserve to be invested in.

"That Equity May Prevail"…. It is not prevailing in state budgets. It is not prevailing in the minds of our elected leaders. In this economy, it certainly should be prevailing in the minds of consumers and business operators. We need to provide the information for value comparison – comparing our value to that of our states' health service programs, law enforcement services; all the competing interests – to be in the minds of the key decision makers whose assistance and support we need in enhancing our programs. I look forward to working together and seeking your assistance in taking measure of our worth and advertising why we are worth investing in.

I hope that, as your Chairman, over the next year, I can help in coordinating efforts to market ourselves, to tell our story, to compile the best of what many of you may have already developed, and to seek additional information to advertise our worth and that of our programs to the marketplace we serve and protect. "Taking Measure of Our Worth:" Let's work together!

In the spirit of working together, let's acknowledge all those who have taken an active role in serving on the many committees, task forces, and work groups to accomplish the goals of this Conference. To all of you, thank you.

In moving forward, I have a number of appointments to make, with acknowledgment that some additional appointments have yet to be finalized, and I will be making those announcements soon.

Laws and Regulations Committee:

- To Be Later Announced: One appointment for a one-year term.
- Replacing John Gaccione, who has been appointed to the Board of Directors is Richard Lewis, Georgia, five-year term.

Specifications and Tolerances Committee:

- To Be Later Announced, five-year term.

Professional Development Committee:

- Kristin Macey, California, five-year term.

Nominating Committee:

- Chair, Tim Tyson, Kansas
- Judy Cardin, Wisconsin
- Charles Carroll, Massachusetts
- Thomas Geiler, Barnstable Regulatory Services, Massachusetts
- Joe Gomez, New Mexico
- Maxwell Gray, Florida
- Randy Jennings, Tennessee

Credentials Committee:

- To Be Later Announced

Presiding Officers:

- Mike Boitano, Amador County, California
- To Be Later Announced, three additional appointments

Parliamentarian:

- Lou Straub, Fairbanks Scales, Inc.

Chaplain:

- Stephen Langford, Cardinal Scale Manufacturing Company

Sergeants-At-Arms:

- I will be working with our host for the 2012 Annual to designate Sergeants-At-Arms.

Again, it is truly my honor and privilege to serve as your NCWM Chairman this year. I look forward to working with Chairman-Elect, Stephen Benjamin and all of you in continuing promoting and measuring the value of the important work of the National Conference on Weights and Measures.

NCWM 2011 Annual Meeting Honor Award Recipients

2011 Lifetime Achievement Award:

- **Steven Malone,** Retired, Nebraska Weights and Measures Division

2011 Distinguished Service Award:

- **Ross Andersen,** Retired Administrator, New York Bureau of Weights and Measures
- **Bill Braun,** Retired Consultant, formerly Procter and Gamble
- **Judith Cardin,** Chief, Wisconsin Weights and Measures
- **Tom Geiler,** Director of Regulatory Services, Barnstable Weights and Measures, Barnstable, Massachusetts
- **Darrell Flocken,** Manager of Compliance Services, Mettler Toledo
- **Max Gray,** Chief, Florida Bureau of Weights and Measures
- **Robert Murnane,** President, Seraphin Test Measure
- **Henry Oppermann,** Weights and Measures Consulting, LLC, formerly NIST
- **Thomas Stabler,** Retired, Stabler Training Services**,** formerly NIST
- **Gilles Vinet,** Vice President of Program Development, Measurement Canada

2011 Contributions Award:

- **Jonelle Brent,** Bureau Chief, Illinois Weights and Measures
- **Vicky Dempsey,** Chief Inspector, Montgomery County, Ohio
- **Doug Hutchinson,** Senior Program Officer, Program Development Directorate at Measurement Canada
- **Kristin Macey,** Director, California Measurement Standards Division

Attendance Recognition:

Full Name	Organization	State	No. of Years
Tom Bloemer	Department of Agriculture	KY	5
Tim Chesser	Bureau of Standards	AR	5
Douglas Deiman	Division of Measurement Standards/CVE	AK	5
James Hewston	Scale Source	NE	5
Yefim Katselnik	Dresser Wayne	TX	5
David Rajala	Total Meter Services, Inc.	PA	5
Dale Saunders	Department of Agriculture and Consumer Services	VA	5
John L. Sullivan	Department of Agriculture and Commerce	MS	5
Elizabeth Tansing	Food Marketing Institute	VA	5

Full Name	Organization	State	No. of Years
Lisa Warfield	NIST Weights and Measures Division	MD	5
Loretta Carey	U.S. Food and Drug Administration	MD	10
Steven Grabski	Wal-Mart Stores, Inc.	AR	10
Jeff Humphreys	Los Angeles Department of Agriculture	CA	10
Paul A. Lewis, Sr.	Rice Lake Weighing Systems	WI	10
Terence McBride	Memphis Weights and Measures	TN	10
Steven Cook	NIST Weights and Measures Division	MD	15
William Cooper	Tuthill Transfer Systems	IN	15
Jack Kane	Department of Labor and Industry Business Standards	MT	15
Lawrence Stump	Indiana State Department of Health	IN	15
Tina Butcher	NIST Weights and Measures Division	MD	20
Gilles Vinet	Measurement Canada	ON	20
Charles Carroll	Division of Standards	MA	30

Report of the Board of Directors

Tim Tyson
Director
Kansas Department of Agriculture
Weights and Measures Division

Reference
Key Number

100 INTRODUCTION

The Board held its quarterly Board of Directors (BOD) meeting on Saturday, July 16, 2011, and continued that meeting during work sessions throughout the remainder of the Annual Meeting. The BOD and the National Type Evaluation Program (NTEP) Committee invited members to dialogue with the BOD on the following issues: Improving Standards Development, Mutual Acceptance Arrangements, Increasing Efficiency and Effectiveness, and participation internationally, i.e., OIML, CFTM, APLMF, and USNWG.

Table A identifies the agenda and appendix items in the Report. Agenda items are reference key number, item title, and page number. An item marked with an **"I"** after the reference key number is an informational item. An item marked with a **"V"** after the reference key number is a voting item. Table B shows the results of voting items.

Table A
Table of Contents

Reference Key Number		Title of Item	Page
100		**INTRODUCTION**	**BOD - 1**
100-1	I	Membership and Meeting Attendance	BOD - 2
100-2	I	NCWM Newsletter and Website	BOD - 3
100-3	I	Meetings Update	BOD - 4
100-4	I	Participation in International Standard Setting	BOD - 4
100-5	I	Efficiency and Effectiveness	BOD - 5
100-5A	I	Regional Support	BOD - 5
100-5B	I	Standing Committees	BOD - 6
100-5C	I	Meeting Format	BOD - 7
100-6	V	Bylaws Amendment: Article I, Section 2 – Tax Exempt Status	BOD - 8
100-7	V	Bylaws Amendment: Article X, Section 6 – Committee Reports	BOD - 9
100-8	V	Bylaws Amendment: Article X, Sections 9A and 9B – Voting	BOD - 9
100-9	I	Strategic Planning	BOD - 11
100-10	I	Financial Report	BOD - 11
Appendix A – Report on the Activities of the International Organization of Legal Metrology (OIML) and Regional Legal Metrology Organizations			**A1**
I.		Report on the Activities of the OIML Technical Committees	BOD - A2
II.		Report on the 45th CIML Meeting in Orlando, Florida, in September 2010	BOD - A5
III.		Future OIML Meetings	BOD - A7
IV.		Regional	BOD - A7
Appendix B – Associate Membership Committee (AMC)			**BOD - B1**
Interim Meeting Minutes			B1

Table B
Voting Results

Reference Key Number	*House of State Representatives*		*House of Delegates*		*Results*
	Yeas	*Nays*	*Yeas*	*Nays*	
Report					All items adopted by voice vote

Details of all Items
(In order by Reference Key Number)

100-1 I Membership and Meeting Attendance

The Board continues to assess avenues for improving membership and participation at Interim and Annual Meetings. Membership and attendance are driven to some degree by the items on the agendas and by the economy. NCWM actively reaches out to potential stakeholders notifying them of agenda items that may be of interest and warrant their attention. T his effort is believed to have had a positive effect on both membership and meeting attendance in the past two years.

The attendance for Interim and Annual Meetings in 2010 were exceptional, exceeding 2009 attendance. The 2011 Interim Meeting was also very well attended. The addition of technical sessions for task groups and subcommittees on Sunday afternoons, not only improves the standards development process, but also adds value for stakeholders who attend.

Membership levels track closely with the economy as shown in the yearly comparison below. Just as membership was rebounding from the previous recession, the next one hit even harder in 2008, resulting in declines in 2008 and 2009, especially in the public sector. It appears that membership has leveled out this year and is in good position to begin building again.

The following is a comparison of NCWM membership levels for the past six years.

NCWM Membership Report						
	June 2011	**June 2010**	**June 2009**	**June 2008**	**June 2007**	**June 2006**
Associate	813	814	822	848	863	837
Foreign Assoc.	62	53	53	56	53	61
Federal Gov't	11	12	10	9	9	13
NIST	11	12	10	9	9	13
State Gov't	567	565	696	831	825	812
Local Gov't	495	524	558	554	565	492
Int'l. Gov't	14	12	24	22	31	23
Retired	202	196	196	232	221	215
Total	**2180**	**2188**	**2,373**	**2,567**	**2,581**	**2,465**

100-2 I NCWM Newsletter and Website

The Board continuously considers ways to monitor and improve the content of the newsletter and website. Members are encouraged to bring ideas and articles forward for inclusion in newsletters. Of particular interest are articles that would be pertinent to field inspectors and the service industry.

The new NCWM website has been very well received. The e-commerce feature with an online shopping cart has been a great success for fast and easy membership renewals, publication orders, meeting registrations, and the newly added payment of NTEP certificate maintenance fees. Improvements will continue as the website evolves to serve members and customers more effectively. The following are descriptions of more recent additions and improvements on the NCWM website.

Online Position Forum: There was a live demonstration of this new comment and polling system at the 2011 Interim Meeting. Another demonstration will be given at the 2011 Annual Meeting. The initial launch date for the Online Position Forum is May 2011.

The Position Forum is not a voting system. It is simply a method to present positions, opinions, and supporting documents. During the month of May, all active, associate, and advisory members have the opportunity to login, view Committee agenda items, enter positions and comments, and even upload supporting PDF documents for each agenda item of standing committees or the Board of Directors. The options for each agenda item are:

- Support
- Support with comments
- Oppose with comments
- Neutral
- Neutral with comments

During the month of June, members are able to view positions, comments, and supporting documents by others as a means of preparing for the deliberations and voting at the Annual Meeting in July 2011. This will give stakeholders the ability to come into the Annual Meeting more informed on the issues and with a better idea of positions others may have.

A suggestion was heard at the 2011 Interim Meeting to also give associations the ability to enter positions and comments, not just individuals. Since the login is based on membership credentials for individuals rather than organizations, this request cannot be accommodated.

Social Networking: Social networking has quickly expanded into business and customer networking as businesses reach out to the new generation of handheld devices and Internet networking to increase public awareness of their services and increase their customer base. In the fall of 2010, NCWM opened accounts in LinkedIn, Facebook, and Twitter to improve our outreach. By opening these accounts, NCWM is now more visible in Internet search engines and will be more identifiable to tech-savvy stakeholders. Those who follow NCWM on these networks will receive instant notifications from NCWM regarding meetings and announcements.

E-Commerce for NTEP Maintenance Fees: As of October 1, 2010, holders of NTEP Certificates of Conformance can now pay their annual maintenance fees online. It is quick, easy, and especially helpful to international customers who traditionally have suffered bank fees to wire funds electronically. As with other e-commerce products offered on the NCWM website, this new offering has been very well received.

National Certification Program: Now that the National Certification Program has launched with its first exam, NCWM has created a fast and easy method to place orders to take the exam through our website. The exams are ordered through the online shopping cart at www.ncwm.net. Members who login will receive member pricing, which is currently set at no charge for taking the exam. Non-members will be assessed a fee of $75 per exam. As orders are received, NCWM sends an e-mail to the applicant providing them the credentials to log-in to the test site to take the exam online.

The NCWM website continues to be a work in progress. Many good suggestions have been offered and incorporated into the site and the regional sites that are hosted and maintained by NCWM. Ms. Lindsay Hier, Project Coordinator for NCWM, serves as the Webmaster. Comments and suggestions for improvements to the newsletters and website should be directed to NCWM at (402) 434-4880 or via e-mail at info@ncwm.net.

100-3 I Meetings Update

Interim Meetings	
January 22 - 25, 2012	Monteleone, New Orleans, Louisiana
January 27 - 30, 2013	Charleston, South Carolina
January 2014	Staff will research options in Albuquerque, New Mexico.
Annual Meetings	
July 17 - 21, 2011	Holiday Inn Downtown at the Park, Missoula, Montana
July 15 - 19, 2012	Holiday Inn by the Bay, Portland, Maine
July 2013	Seelbach Hilton Louisville, Louisville, Kentucky

NCWM meetings are known for long days filled with important business. NCWM strives to plan meetings in locations that offer comfortable rooms and a variety of entertainment and dining options close by, so our attendees can break away for a couple hours in the evening to relax and enjoy their surroundings. The following is a brief description of future planned events.

The 2012 Interim Meeting will be held at the Monteleone in New Orleans, Louisiana. The Monteleone is a member of Historic Hotels of America and rests within the New Orleans French Quarter offering something for everyone in the newly revitalized city. From there, we go to the Holiday Inn by the Bay in Portland, Maine, for the 2012 Annual Meeting. This hotel has successfully hosted NCWM previously. It is within blocks of the charming Old Port, a working waterfront, and the Arts District.

The 2013 Interim Meeting will be at the Francis Marion Hotel in historic downtown Charleston, South Carolina. It is truly a beautiful hotel situated perfectly for attendees to get the full Charleston experience. The 2013 Annual Meeting will be held at a location to be determined in the Southern Region.

The Board will work with the Central Weights and Measures Association (CWMA) for a host city for the 2014 Annual Meeting. The region should provide two or three cities where they believe a successful meeting could be held, taking into consideration the location, ease and cost of air travel, a selection of hotels with sufficient rooms and meeting space, etc. Members are not asked to provide specific hotels and are not to enter into negotiations with the hotels, However, NCWM's site selection criteria is available upon request from Ms. Shari Tretheway, NCWM Office Manager, at (402) 434-4880 or e-mail to shari.tretheway@ncwm.net.

Looking down the road, the Board of Directors would like to make the 2015 Annual meeting a very special event. In addition to addressing the business of the organization, NCWM will be celebrating its 100th Annual Meeting 110 years after our first meeting in 1905. Traditionally, NCWM rotates locations for its Annual Meetings among the four regions. The normal rotation for 2015 would place this meeting in the western region, but the Board is considering a deviation in the normal rotation by holding this meeting in the Washington, DC area; the city that hosted the first meeting in 1905 and for many years thereafter. The Board of Directors has formed a small work group to develop plans for the 100th NCWM Annual Meeting. The group will consider locations and special events to commemorate and bring excitement to the occasion.

100-4 I Participation in International Standard Setting

The International Committee of Legal Metrology (CIML) Meeting was held at the Doubletree Hotel in Orlando, Florida, September 20 - 24, 2010. Dr. Charles Ehrlich invited NCWM Chairman, Tim Tyson, to provide a keynote address on September 21 to welcome the assembly and on September 23, NCWM Executive Director, Don Onwiler,

presented an overview of the U.S. legal metrology system. NTEP Administrator, Jim Truex, was also on hand throughout the week to answer questions and discuss issues with the various CIML members. The meeting was a valuable opportunity for NCWM to gain a fuller understanding of the CIML.

An International Organization of Legal Metrology (OIML) Seminar on Conformity to Type (CTT) is planned for summer 2011. OIML is in the beginning stages of developing a CTT program. NCWM has been invited to share its experience with the NTEP Conformity Assessment Program, and in particular, the Verified Conformity Assessment Program (VCAP) that serves as a main element. NCWM is hopeful that the VCAP audit reports can also satisfy the needs of the OIML CTT at a significant savings to certificate holders.

Dr. Charles Ehrlich provided an informative report on NIST WMD activities in international standards development. (see Appendix A).

100-5 I Efficiency and Effectiveness

The Board is examining methods of efficient use of NCWM resources that will promote effective service to its members and stakeholders. The Board welcomes member feedback on ideas to increase the effectiveness of the Conference.

At the 2011 Annual Meeting, the Board received many comments from the public and private sectors for an effort to support adequate funding for weights and measures programs. Administrators need to be prepared to justify their programs to the people who control their future. Weights and measures programs can no longer quietly go about their business. One suggestion was for a concerted effort of NCWM and NIST to develop material that justifies weights and measures programs. Another suggestion was to seek federal funding by drawing attention to the importance of regulatory presence. One member suggested that weights and measures officials need to simply put themselves in the public eye by working with local media. NCWM could assist by developing a media packet for use locally. Many programs have found that the most effective way to get legislative support for funding is through support from the industries they regulate.

The Board of Directors has spent much time discussing these concerns in recent months. Plans are being developed to address them in the coming year.

100-5A I Regional Support

Regional Website Hosting and Maintenance: For several years, NCWM has hosted the websites for the Southern and Central regions. Recently, the Western and Northeastern regions accepted an offer from NCWM to host their websites as well, at a cost to NCWM of $4000 for each region. All four regional associations' websites are now hosted through NCWM. While the regional sites are very similar in layout, each region has the ability to customize menu options and page content.

NCWM absorbs the cost in hosting fees and assesses an annual charge of $200 per year to each region for unlimited staff time to update the content of the websites. This fee for unlimited updates replaces the previous method of hourly billing for staff time in hopes that regions will be more proactive in keeping information up to date on the sites. Each region has designated one person who is authorized to make requests to NCWM for updates and changes to their respective websites. Additionally, NCWM staff will contact these representatives each quarter as a reminder to review their web pages for necessary updates. This process is outlined in NCWM Policy 3.1.6. Regional Website Hosting and can be viewed or downloaded from the policy manual on the NCWM website.

Shopping Cart Service for Regional Websites: Last year, NCWM received bids from its web service provider to add shopping cart services to each of the regional websites for online membership dues and meeting registrations. The estimated cost was $3500 per region at the region's expense. The Western region accepted this offer and the shopping cart was in place in time to receive registrations for the 2010 Western Weights and Measures Association (WWMA) Annual Meeting. The actual cost for implementation for the WWMA shopping cart services was only $1200; far less than the original estimate. Cost will vary according to the complexity of the project.

WWMA reported to the NCWM Board of Directors that the online meeting registrations worked very well for them. It provides a means for WWMA members to pay dues and meeting registrations with credit cards. The transaction is processed through the NCWM PayPal account and NCWM transfers the funds to the region's bank account, less credit card fees of about 3.5 %.

If other regions are interested, please contact NCWM for details (info@ncwm.net or (402) 434-4880).

Administrative Support to the Regions: NCWM developed a fee schedule that would apply to regions who request NCWM administrative services for membership invoicing, meeting registration, database maintenance, and monthly reporting. These services, including credit card processing, are available whether or not a region elects to add the shopping cart feature to their website as mentioned above. The shopping cart feature would simply be an added enhancement to the administrative process and customer convenience. At this time, none of the regions have requested additional administrative services using the new fee structure. For more information, please contact Ms. Shari Tretheway, NCWM Office Manager, at (402) 434-4880 or e-mail to shari.tretheway@ncwm.net.

100-5B I Standing Committees

At the fall 2009 Board Meeting, a small group was formed to review ideas and options on structure, in an effort to ease the workload and improve the process for developing difficult agenda items. This work group reported back to the Board at the 2010 Interim Meeting. The report included a review of the past Committee workload. The work group noted that the format of the Interim Meeting was modified in recent years to be a day shorter, and to have consecutive open hearings instead of concurrent open hearings. These format changes reduced the amount of time the Committees have to develop their agenda items. The Board also discussed the use of Informational and Developing status for items, noting that it may be helpful to set out some guidelines in how these categories of items are applied. The Committee structure was left unchanged, but the following steps have been taken to assist and support the important work of Standing Committees.

Committee Orientation: In September 2010, newly elected NCWM officers and directors were invited to NCWM headquarters for orientation into the Board of Directors. It proved to be a success and the concept was immediately expanded to include a separate orientation program for new committee chairs and new committee members. The first NCWM Committee Orientation took place in November 2010 at the National Institute of Standards and Technology (NIST) offices in Gaithersburg, Maryland, to facilitate participation of all NIST technical advisors. The program presented by NCWM Chairman, Tim Tyson and Executive Director, Don Onwiler included a half-day session for committee chairs followed by a full day for the new committee members. The focus included leadership, administrative processes, roles and responsibilities, and review of the NCWM Committee Member Handbook. Additionally, the Committee chairs and NIST technical advisors reviewed agenda items for the new members so that they would be prepared in advance for the technical discussions and open hearings.

Status of Agenda Items: The Board of Directors has discussed a need for clarification and guidance regarding the status that committees assign to agenda items. The options are Voting, Informational, Developing, or Withdrawn. If not implemented properly, items may not receive the best due process and expedient development. After much discussion, the following clarification has been presented in the NCWM Committee Member Handbook to provide guidance and ensure proper handling of items so that they do not fall through the cracks.

> **Voting:** These are items that the Committee believes are fully developed and ready for final consideration of the voting membership. Each item has either received majority support from the Committee or the Committee has reached agreement that it is ready for voting status to let NCWM membership decide. The committee has the ability to remove items from the voting agenda at the Annual Meeting by changing the status prior to a vote of the NCWM membership. The Committee may amend voting items during the course of the Annual Meeting based on additional information received following the Interim Meeting and testimony received at the Annual Meeting. These items may also be amended by the voting membership during the voting session of the Annual Meeting following the procedures outlined in the NCWM Bylaws.
>
> **Informational:** These items are deemed by the committee to have merit. They contain a proposal to address the issue at hand and a meaningful background discussion for the proposal. However, the Committee wants to

allow more time for review by stakeholders and possibly further development to address concerns. The Committee has taken the responsibility for any additional development of informational items. At the Annual Meeting, the Committee may change the status of the items, but not to voting status because the item has not been published as such in advance of the meeting.

Developing: These items are deemed by the Committee to have merit, but are found to be lacking enough information for full consideration. Typically the item will have a good explanation of the issue, but a clear proposal has yet to be developed. By assigning developing status, the Committee has sent the item back to the source with the responsibility of further development. The Committee report will provide the source with clear indication of what is necessary to move the item forward for full consideration. The item will be carried in the committee agenda in bulletin board fashion with contact information for the person or organization that is responsible for the development. Since the Committee is not required to receive testimony on developing items, this status should be carefully implemented so as not to weaken the standards development process.

Withdrawn: These are items that the Committee has found to be without merit based on overwhelming lack of support by NCWM stakeholders. The Committee's determination to withdraw should not be based on the committee's opinion alone, but on the input received from stakeholders. The Committee's report will contain an explanation for the withdrawal of the item.

Task Groups and Subcommittees: Task groups have been used sparsely as a means of addressing particularly difficult issues. Sometimes these work groups have been more successful than others. The Board believes task groups can be a very effective tool for committees that are struggling with particularly difficult items on a committee agenda, so NCWM is becoming more proactive in creating and supporting the work of these task groups.

Last year, two new task groups were created by then NCWM Chairman, Mr. Randy Jennings. He appointed Mr. Jeff Humphreys, Los Angeles County, California, to chair the NCWM Task Group on Retail Motor Fuel Price Posting and Computing Capabilities. This task group reports directly to the Specifications and Tolerances (S&T) Committee. The second is the NCWM Task Group on Packaged Printer Ink and Toner Cartridges, chaired by Ms. Maureen Henzler, Kansas. This task group reports directly to the Laws and Regulations (L&R) Committee.

This year, NCWM formed the new Packaging and Labeling Subcommittee which will report to the NCWM Laws and Regulations Committee. This Subcommittee replaces the former Industry Committee on Packaging and Labeling and is open to active and associate members. NCWM Chairman, Mr. Tim Tyson, has appointed Mr. Chris Guay, Procter and Gamble, to chair the Subcommittee. The Subcommittee is charged to assist the Laws and Regulations committee in the development of agenda items and provide guidance to regulators and industry on packaging and labeling issues. NCWM hopes that federal agencies will also provide representation on this important new Subcommittee. Anyone interested in serving on the Packaging and Labeling Subcommittee may contact NCWM Chair, Tim Mr. Tyson.

Resources offered by NCWM to these task groups and subcommittees include meeting space at Interim and Annual Meetings, conference calling services, dedicated e-mail listservs, a dedicated web page for posting and archiving documents related to their work, and broadcast e-mail services to reach targeted audiences. Additionally, NIST has provided technical advisors and web meeting forums. All of these tools enable year-around progress of task group and subcommittee work.

100-5C I Meeting Format

The formation of task groups creates a need for meeting space. It is best for task groups to have an opportunity to meet prior to open hearings of the Interim and Annual Meetings, so that they can present updated reports and recommendations to their respective Standing Committees during open hearings. Beginning with the 2011 NCWM Interim Meeting, the schedule for Sunday afternoon has been modified. Standing Committees are asked to complete their agenda review via conference call or web meeting in advance of traveling to the meeting. This frees up meeting rooms on Sunday afternoon for task groups to meet and for stakeholders to observe and even participate in those meetings. NCWM has reserved the hour of 4:00 p.m. to 5:00 p.m. for standing committees to have the

meeting space if they need additional agenda review before open hearings commence. If this need does not exist, the task groups will be allowed to extend the length of their meetings.

The Board of Directors envisions many opportunities for training and technical work on the Sunday afternoons preceding Interim and Annual Meetings using the space that was formerly occupied by Standing Committees for agenda review sessions.

100-6 V Bylaws Amendment: Article I, Section 2 – Tax Exempt Status

(This item was adopted)

Purpose: Update the NCWM Bylaws to recognize NTEP revenues as a significant source of revenue.

Item under Consideration: Amend NCWM Bylaws Article I, Section 2 as follows:

Section 2 - Tax Exempt Status

This Corporation is organized as a not-for-profit business league under section 501(c)(6) of the Internal Revenue Code exclusively for not-for-profit purposes, including but not limited to improvement of business conditions, higher business standards and better business methods; promotion of uniformity in weights and measures laws, regulations, and practices; and sponsorship of educational and scientific programs. Such purposes are described in the Article II, "Goals," in these Bylaws. The Corporation is authorized, for not-for-profit purposes, to make distributions to organizations that qualify as exempt organizations under § 501(c) of the Internal Revenue Code, or the corresponding section of any future tax code. The Corporation is primarily supported by membership dues, ~~**and**~~ registration fees ~~**paid by members**~~ to attend meetings of the Corporation **and by fees for certification of weighing and measuring devices under the National Type Evaluation Program.**

No part of the net earnings of the Corporation shall inure to the benefit of, or be distributed to its members, directors, officers, or other private persons, except that the Corporation shall be authorized and empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of the purposes set forth in the Articles of Incorporation. No substantial part of the activities of the Corporation shall be the carrying on of propaganda, or otherwise attempting to influence legislation, and the Corporation shall not participate in, or intervene in (including the publication or distribution of statements) any political campaign on behalf of or in opposition to any candidate for public office. Notwithstanding any other provision of these Bylaws, and the Articles of Incorporation, the Corporation shall not carry on any other activities not permitted to be carried on (a) by a Corporation exempt from Federal income tax under section 501(c)(6) of the Internal Revenue Code, or the corresponding section of any future Federal tax code, or (b) by a corporation, contributions to which are deductible under the Internal Revenue Code as a trade or business expense ordinary and necessary in the conduct of the Corporation's business.

Discussion: In 1997, NCWM formed into a nonprofit corporation. At that time, NTEP was administered by NIST. In 2000, NCWM assumed administration of NTEP and, thus, began collecting fees for the program such as application fees and annual maintenance fees. Article I, Section 2 of the NCWM Bylaws defines the primary or significant revenue sources for NCWM under our tax exempt status with the Internal Revenue Service (IRS). This amendment will update the bylaws to recognize revenues received from NTEP.

100-7 V Bylaws Amendment: Article X, Section 6 – Committee Reports

(This item was adopted)

Purpose: Simplify the procedures required in order to request removal of an item from the voting consent (VC) calendar of Committee reports at the Annual Meetings.

Item under Consideration: Amend NCWM Bylaws Article X, Section 6 as follows:

Section 6 - Committee Reports

Alternatives that may be used in voting on the reports:

A. vote on the entire report;

B. vote on grouped items or sections; or

C. vote on individual items; according to

1. committee discretion; or

2. on request by a ~~**voting delegate, with the support of 10 others**~~ **registered attendee.**

Discussion: Each Standing Committee has the option of placing what they believe to be noncontroversial items on a voting consent calendar to expedite the voting process at the Annual Meeting. There are many reasons why a person in attendance may wish to have an item removed from the consent calendar. A person may wish to cast a vote in opposition to an item without opposing the other items on the consent calendar. A person may want an opportunity to comment on a specific item before a vote is cast. A person may simply want a separate vote tally for an individual item for the record.

Current Bylaws require that the request come from a voting delegate, and that a minimum of 10 additional voting delegates support such a motion before an item may be removed from the consent calendar for individual consideration. However, this requirement has not been consistently enforced in past years. Committee chairs and NCWM parliamentarians have typically honored any request from the floor to remove items from the committee consent calendar.

The original proposal struck the requirement for support of 10. Following the 2011 Interim Meeting, the Board further modified the proposal to reflect that any registered meeting attendee may request a separate vote of an item, instead of limiting the privilege to voting delegates. Members are asked to consider whether the Bylaws should be followed as written or modified as proposed in this item to reflect recent practice.

100-8 V Bylaws Amendment: Article X, Sections 9A and 9B – Voting

(This item was adopted)

Purpose: Provide clear definition of voting rights for the House of General Membership in accordance with Article X, Section 3 of the Bylaws.

Item under Consideration: Amend NCWM Bylaws Article X, Sections 9A and 9B as follows:

Section 9A -Voting - Technical Issues

At the conclusion of debate (if authorized) on a motion, there shall be a call for the vote by voice vote, a show of hands, standing, or electronic count.

A. Motion Accepted If:

1. a minimum of 27 members of the House of State Representatives votes Yea.

And ~~If~~

2. a majority of the members of the House of Delegates votes Yea (a minimum of 27 Yea votes required);[1]

~~**And, in the case of motions relating to business items, If**~~

~~**3. a majority of the members of the House of General Membership votes Yea (a minimum of 27 Yea votes required).**~~[1]

B. Motion Rejected If:

1. a minimum of 27 members of the House of State Representatives votes Nay

And ~~If~~

2. a majority of the members of the House of Delegates votes Nay (a minimum of 27 Nay votes required);[1]

~~**And, in the case of motions relating to business items, If**~~

~~**3. a majority of the members of the House of General Membership votes Nay (a minimum of 27 Nay votes required).**~~[1]

C. Split Vote:

When a split vote is recorded or the minimum number of votes supporting or opposing an issue is not obtained in the House of State Representatives, the issue is returned to the Standing Committee for further consideration,~~**except when there is a split vote on approval of the biennial report for filing with the Nebraska Secretary of State. In the case of a split vote on the filing of the biennial report, the vote of the Chairman on the filing of the report shall prevail**~~.

~~**Except for the biennial report, the**~~ **The** Committee may drop the issue or reconsider it for submission the following year. The issue cannot be recalled for another vote at the same Annual Meeting.

Section 9B - Voting - Business Issues

At the conclusion of debate (if authorized) on a motion, there shall be a call for the vote by voice vote. In the event that a voice vote is too close to be determined in the opinion of the Chairman, there shall be a show of hands, standing vote, or machine (electronic) vote count.

A. Motion Accepted If:

1. a majority of those members present and voting vote Yea.

B. Motion Rejected If:

1. a majority of those members present and voting vote Nay.

C. Tie Vote:

In the case of a tie vote, the vote of the Chairman shall prevail.

Discussion: Section 9A – Voting – Technical Issues makes several references to the vote in the House of General Membership. According to Article X, Section 3, this House cannot vote on technical items. Section 9A also makes reference to a split vote of the biennial report, which is the election of officers and directors. That is a business item and should not be referenced in Section 9A.

[1] If the minimum number of votes required to pass or fail an issue is not cast in the House of Delegates ~~**or the House of General Membership**~~, the issue will be determined by the vote of the House of State Representatives.

The proposal strikes all references of the House of General Membership from Section 9A as well as references to approval of the biennial report. All business items are adequately addressed in Section 9B – Voting – Business Issues.

100-9 I Strategic Planning

The purpose of the strategic plan is to ensure the organization is moving forward and in the right direction. The strategic plan is available on the NCWM website at www.ncwm.net under the "Members Only" tab.

The Board of Directors will review the strategic plan at the January 2012 meeting. Members are asked to provide input before that meeting on the five current goals in the strategic plan and any other goals that they believe should be included. Mr. Steve Patoray, BIML Director, highlighted the first goal for NCWM, to enhance its role as a national and international resource for measurement standards development. He extended an offer to assist NCWM in this goal and to work effectively toward the mutual benefit of both organizations and their missions.

Five primary goals are contained in the strategic plan.

1. Enhance the NCWM as a national and international resource for measurement standards development.
2. Promote uniform training for individuals involved in weights and measures.
3. Continue to improve the National Type Evaluation Program (NTEP).
4. Expand the role of the NCWM as a resource for state and local weights and measures programs.
5. Ensure financial stability of the NCWM.

National Certification Program: The Board is continuing to refine the strategies and measurements for meeting these goals. One of the strategies for the second goal is the implementation of a National Certification Program for weights and measures officials. This strategy has been placed as a top priority. In the fall of 2010, the Board received a proposal from an individual, to contract services to NCWM as the Certification Exam Coordinator working with the Professional Development Committee (PDC). The Board deliberated over the proposal in a conference call in October and is working out the details of a possible contract for services.

Viable Support for NTEP Laboratories: Another strategy of high priority is to maintain viable support for NTEP laboratories under the third goal. The Board will be monitoring the number of full-time employees associated with the authorized laboratories, and will continue to track evaluation time and backlog statistics to ensure that NTEP evaluations can be completed in a timely manner.

Online Position Forum: The project is completed for launch on May 1, 2011. A live demonstration was given at the 2011 Interim Meeting, and another is planned for the 2011 Annual Meeting. Please see agenda Item 100-2 for more details.

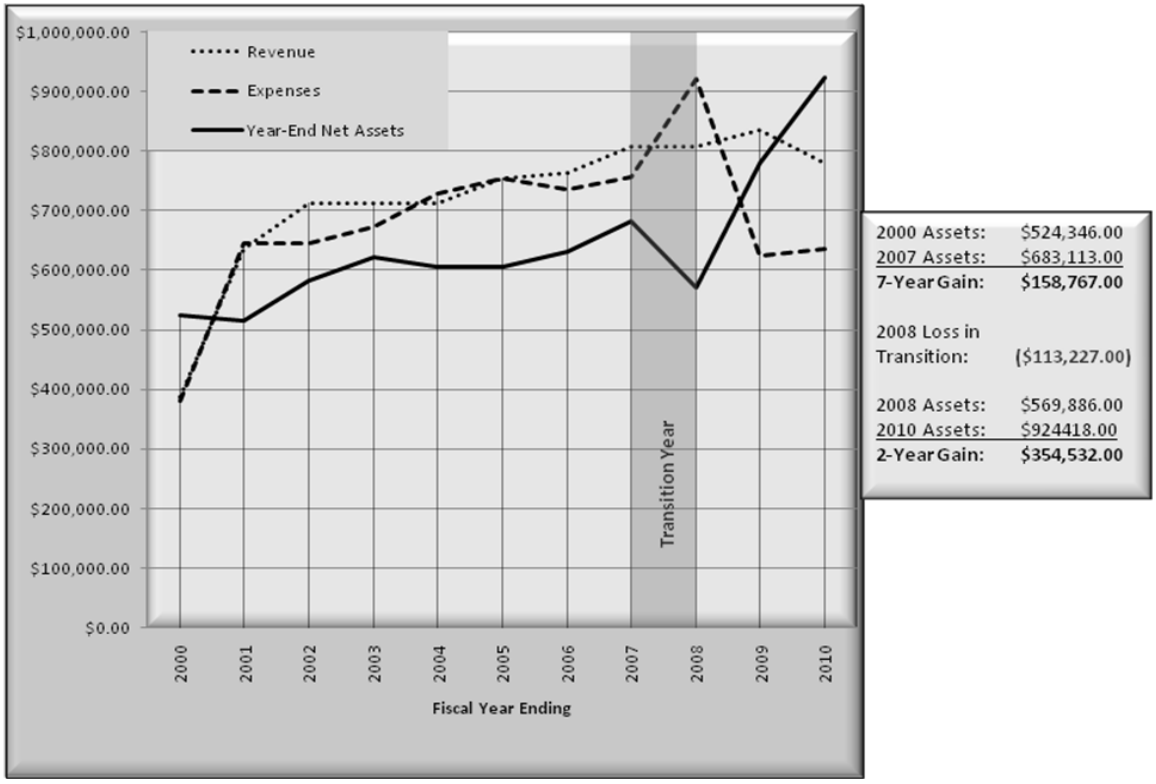
100-10 I Financial Report

NCWM operates on a fiscal year of October 1 through September 30. Budgets are set to be conservative on projected revenues and realistic on anticipated expenses.

The Executive Director was asked to provide a graphic view of NCWM finances before and after NCWM hired its own staff and opened a headquarters office in 2008. Prior to that, NCWM contracted for the services of an association management company. Below is a graphic view of the past 10 fiscal years based on year-end audit reports. The spike in expenses in 2008 reflects the cost of the management transition. The management company was still under contract that year while NCWM hired employees and procured office space, furniture, computers, etc. The graph shows significant savings in the following years of 2009 and 2010 even though NCWM invested significantly in new initiatives during that time. Those initiatives of the past two years include the new website with

improved functionality, implementation of e-commerce, new regional association websites, the National Certification Program, and other improvements to services.

10-Year Financial Analysis



The following is the balance statement as of June 30, 2011, in comparison with the same time the previous year.

ASSETS	June 30, 2010	June 30, 2011
Current Assets	$	$
Checking/Savings		
Associate Member Fund	6,614.23	18,425.73
Certificates of Deposit	792,770.96	954,265.98
Checking	39,083.40	-26,345.11
Savings	144,401.83	208,118.33
Total Checking/Savings	$ 982,870.42	$ 1,154,464.93
Accounts Receivable	0.00	1,035.00
Other Current Assets	54,298.74	51,589.87
Other Assets	6,541.11	8,617.67
TOTAL ASSETS	**$ 1,043,710.27**	**$ 1,215,707.47**
LIABILITIES & EQUITY		
Liabilities		
Current Liabilities	2,708.44	10,891.87
Total Liabilities	$ 2,708.44	10,891.87
Equity		
Unrestricted Net Assets	784,771.17	931,421.51
Net Income	256,230.66	273,394.09
Total Equity	$ 1,041,001.83	1,204,815.60
TOTAL LIABILITIES & EQUITY	**$ 1,043,710.27**	**$ 1,215,707.47**

Mr. Tim Tyson, Kansas, NCWM Chairman
Mr. Kurt Floren, Los Angeles, California, Chairman-Elect
Mr. Randy Jennings, Tennessee, NTEP Chairman
Ms. Judy Cardin, Wisconsin, Treasurer
Mr. Michael Sikula, New York, Northeastern Regional Representative
Mr. Ron Hayes, Missouri, Central Regional Representative
Mr. Stephen Benjamin, North Carolina, Southern Regional Representative
Mr. Brett Saum, San Luis Obispo, California, Western Regional Representative
Mr. Stephen Langford, Cardinal Scale, At-Large
Mr. Mark Coyne, Brockton, Massachusetts, At-Large
Mr. Gordon Johnson, Gilbarco, Associate Membership

Mr. Gilles Vinet, Measurement Canada, Advisory
Ms. Carol Hockert, Chief, NIST, Weights and Measures Division, Executive Secretary
Mr. Jim Truex, NTEP Administrator
Mr. Don Onwiler, NCWM, Executive Director

Board of Directors

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Appendix A

Report on the Activities of the International Organization of Legal Metrology (OIML) and Regional Legal Metrology Organizations

Weights and Measures Division, NIST

INTRODUCTION

The Weights and Measures Division (WMD) of the National Institute of Standards and Technology (NIST) is responsible for coordinating U.S. participation in the International Organization of Legal Metrology (OIML) and other international legal metrology organizations. Learn more about OIML at the website (www.oiml.org) and about NIST Weights and Measures Division at the WMD website (www.nist.gov/owm). Dr. Charles Ehrlich, Group Leader of the International Legal Metrology Group (ILMG), can be contacted at charles.ehrlich@nist.gov or at (301) 975-4834 or by fax at (301) 975-8091.

Please note:

- *OIML publications are available without cost at http://www.oiml.org.*

Table A
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Table B
Glossary of Acronyms

BIML	International Bureau of Legal Metrology	ILMG	International Legal Metrology Group
B	Basic Publication	IR	International Recommendation
CD	Committee Draft[1]	IWG	International Work Group
CIML	International Committee of Legal Metrology	MAA	Mutual Acceptance Arrangement
CPR	Committee on Participation Review	MC	Measurement Canada
D	Document	OIML	International Organization of Legal Metrology
DD	Draft Document[2]	R	Recommandation
DR	Draft Recommendation[2]	SC	Technical Subcommittee
DoMC	Declaration of Mutual Confidence	TC	Technical Committee
DV	Draft Vocabulary[2]	WD	Working Draft[3]
IEC	International Electrotechnical Commission	USNWG	U.S. National Work Group

[1] CD: a draft at the stage of development within a Technical Committee or Subcommittee; in this document, successive drafts are numbered 1 CD, 2 CD, etc.

[2] DD, DR, and DV: draft documents approved at the level of the Technical Committee or Subcommittee concerned and sent to BIML for approval by CIML.

[3] WD: precedes the development of a CD; in this document, successive drafts are number 1 WD, 2 WD, etc.

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

I. Report on the Activities of the OIML Technical Committees

This section reports on recent activities and the status of work in the OIML Technical Committees (TCs) and Technical Subcommittees (SCs) of specific interest to members of the NCWM. Also included are schedules of future activities of the Secretariats, the U.S. National Work Groups (USNWGs), and the International Work Groups (IWGs) of the Committees and Subcommittees.

TC 3/SC 5 "Conformity assessment" (United States)
The Subcommittee held a meeting in Paris, France, in October 2010 to discuss the revision of the documents B 3 (Certificate System) and B 10 (Mutual Acceptance Arrangement). The CIML Preliminary Ballot on B 3 and B 10 closed in July 2011 without any negative votes and a final CIML vote will be held at the CIML Meeting in Prague in October 2011. International comments on a new document entitled "The role of measurement uncertainty in conformity assessment decisions in legal metrology" have been received and are being used by the Secretariat to develop the 2 CD. Please see the Mutual Acceptance Agreement (MAA) section in the NTEP report of this publication for more details on the activities of TC 3/SC 5. For more information on the activities of this Subcommittee, please contact Dr. Charles Ehrlich at (301) 975-4834 or at charles.ehrlich@nist.gov.

TC 5/SC 1 "Environmental conditions" (Netherlands)
The Secretariat distributed the 1 CD revision of D 11 "General requirements for electronic measuring instruments," in February 2011. This is a very important document in the OIML system, and is used by all of the OIML TCs as a general reference for technical and testing requirements on all measuring instruments. The United States participated in a meeting of TC 5/SC 1 to discuss the D 11 document and international comments on the 1 CD in Utrecht, The Netherlands, in June 2011. The OIML Expert Report E 5 "Overview of the present status of the Standards referred to in OIML D 11 – General Requirements for Electronic Measuring Instruments" was recently published and updates all of the International Electrotechnical Commission (IEC) references for testing requirements in D 11. Please contact Mr. Ralph Richter at (301) 975-3997 or at ralph.richter@nist.gov, if you would like further information on this project.

TC 5/SC 2 "Software" (Germany and BIML)
The OIML Document D 31 "General requirements for software-controlled measuring instruments" has been published and will serve as guidance for software requirements in International Recommendations by OIML Technical Committees. The United States participated in the technical work on this document and submitted votes and comments on several drafts of the document. A new project on software verification was approved by the CIML, and the United States is waiting for the first draft of this document. Please contact Dr. Ambler Thompson at (301) 975-2333 or at ambler@nist.gov if you would like to discuss OIML software efforts.

TC 6 "Prepackaged products" (South Africa)
A project to develop an OIML International Quantity Mark, referred to as an IQ Mark, is still ongoing. The IQ Mark is intended to eliminate the need for redundant inspections for compliance with legal metrology requirements for labeling and net contents. Receiving countries want imported packages to meet all of their legal metrology requirements, and packers in exporting countries want to ensure prepackages will not be rejected or require additional inspections after arriving in the destination country. The initial proposal for the program would require that participating packagers meet specific requirements in order to participate in a program for quantity control and labeling of prepackaged goods. The United States is participating in a WG that is developing guidelines on good manufacturing practices that would be used in the IQ Mark's accreditation programs. The United States believes the effort to manage and certify quality control systems will add unnecessary extra costs to all participating suppliers. Even though there is significant opposition to the IQ Mark effort from several countries (including the United States, Denmark, Switzerland and Canada), TC 6 continues to move forward with this project under the premise that such a voluntary system would be of value to developing countries. The United States voted "no" on the 2 CD of the IQ-mark document in May 2010 and received the 3 CD from the Secretariat in August 2011.

NIST is assisting TC 6 in two other important projects: a revision of OIML R 87 "Quantity of Product in Prepackages" (the OIML equivalent to NIST Handbook 133 "Checking the Net Contents of Packaged Goods") and a revision of OIML R 79 "Labeling requirements for prepackaged products."

NIST will host a meeting of TC 6 in Gaithersburg, Maryland September 26 - 30, 2011. Please contact Mr. Ken Butcher at (301) 975-4859 or at kenneth.butcher@nist.gov, if you would like more information about the work of this Subcommittee or to participate in any of these projects.

TC 8 "Measurement of quantities of fluids" (Switzerland)
The CIML has approved projects to revise the following TC 8 documents: R 63 "Petroleum measurement tables" (1994) and R 119 "Pipe provers for testing of measuring systems for liquids other than water" (1996). Both of these documents are important for other OIML Recommendations involving liquid measurement. Please contact Mr. Ralph Richter at (301) 975-3997 or at ralph.richter@nist.gov, if you would like copies of the documents or to participate in any of these projects.

TC 8/SC 1 "Static volume and mass measurement" (Austria and Germany)
The United States now chairs an International Work Group (IWG) that is drafting new sections of OIML R 71 "Fixed storage tanks" and R 85 "Automatic level gages for measuring the level of liquid in fixed storage tanks" to add specific requirements for specialized tanks. OIML R 80-2, "Road and rail tankers, test methods," is being developed. Please contact Mr. Ralph Richter at (301) 975-3997 or at ralph.richter@nist.gov, if you would like copies of the documents or to participate in any of these projects.

TC 8/SC 3 "Dynamic volume and mass measurement for liquids other than water" (United States and Germany)
Subcommittee work is continuing on the development of OIML R 117-2, "Dynamic measuring systems for liquids other than water, Part 2, Test methods," and R 117-3 "Test report format." Meetings of the IWG for the development of R 117 were held in Boras, Sweden, in January 2010; at NIST in Gaithersburg, Maryland, in May 2010; and in Paris, France, in November 2010. The USNWG also worked on this document in Dallas, Texas, in January 2011. The IWG for the development of R 117 has also held several international webinars to accelerate the work on this high priority document and has a meeting scheduled in Braunschweig, Germany in November 2011. The first committee draft of R 117-2 was distributed in March 2011. If you have any questions or would like to participate in the next phases of this project, please contact Mr. Ralph Richter at (301) 975-3997 or ralph.richter@nist.gov.

TC 8/SC 5 "Water Meters" (UK)
OIML, ISO, and CEN are working together to harmonize requirements for water meters using OIML R 49 "Water meters intended for the metering of cold potable water and hot water" Parts 1, 2, and 3 as the base document. The Joint Work Group of these three organizations distributed the 2 CD of the harmonized document in May 2011 with comments to be returned in August 2011. NIST is hosting a joint meeting of the three organizations in Gaithersburg, Maryland, in November 2011. The American Water Works Association (AWWA) Committee on Water Meters is assisting in these efforts. Please contact Mr. Ralph Richter at (301) 975-3997 or at ralph.richter@nist.gov, if you would like copies of documents or to participate in this project.

TC 8/SC 6 "Measurement of cryogenic liquids" (United States)
Members of the Subcommittee and U.S. stakeholders decided that there is sufficient justification for revising R 81, "Dynamic measuring devices and systems for cryogenic liquids." Responses received by the Secretariat indicated that a revision of R 81 was justified to update: (1) electronic tests in accordance with the latest edition of OIML D 11 (2004) and/or the latest IEC and ISO standards; (2) technical requirements to include new developments in hydrogen measurements; (3) Annex C to include current recommendations for density equations; and (4) existing sections into three distinct parts similar in format to recently-developed OIML Recommendations. The Secretariat will ask members of TC 8/SC 6 and the USNWG to review and formally comment on the first draft of the revised R 81 this spring. To obtain more information or to participate in this project, please contact Ms. Juana Williams at (301) 975-3989 or juana.williams@nist.gov.

TC 8/SC 7 "Gas metering" (Netherlands)
The Secretariat distributed the draft recommendation (DR) of OIML R 137-1 and R 137-2, "Gas meters; Part 1: Metrological and Technical Requirements, and Part 2: Metrological controls and performance tests" in May 2011. Extensive U.S. comments on both the 1 CD and the 2 CD were developed in cooperation with the measurement committees of the American Gas Association (AGA). The OIML R 137 document is especially important to U.S. interests because the ANSI B 109 Committee on gas measurement is using R 137 to create a new performance-based standard for gas meters in the United States. Meetings of the WG that is developing this new standard "ANSI B 109.zero" were held in Kansas City, Missouri, in September 2010 and in Savannah, Georgia, in February 2011. Final CIML approval of R 137 is expected in October 2011. Please contact Mr. Ralph Richter at (301) 975-3997 or ralph.richter@nist.gov, if you would like to participate in these efforts or obtain a copy of any of these gas measurement documents.

TC 9 "Instruments for measuring mass" (United States)
The CIML approved a new work item to revise OIML R 60:2000 "Metrological regulation for load cells." This revision is planned to cover everything from the basic principles of R 60 (e.g., tolerances and accuracy classes) to exploring the addition of new requirements. The United States distributed a first working draft revision of R 60, incorporating a major re-formatting of the document. USNWG members and TC 9 Committee members were requested to return comments on R 60 by March 2011. A meeting will be held September 19 - 20, 2011, in Braunschweig, Germany, to discuss the 1 CD of R 60. For more information on these efforts, please contact Mr. John Barton at (301) 975-4002 or john.barton@nist.gov.

TC 9/SC 2 "Automatic weighing instruments" (United Kingdom)
The Recommendation R 134-1, "Automatic instruments for weighing road vehicles in motion – total load and axle weighing," has been approved by the CIML and published. U.S. comments concerning terminology and document scope were incorporated in the document. The test report format of this document, R 134-2, has also been

published. Both OIML R 134 and an ASTM standard will be used to help develop a new section in NIST HB 44 on in-motion weighing systems for the pre-screening of road vehicles. To receive a copy of the OIML documents or to obtain more information on this work, please contact Mr. Richard Harshman at (301) 975-8107 or at harshman@nist.gov.

The DR of OIML R 106 Parts 1 and 2, "Automatic rail-weighbridges," is close to final approval. The DR of R 106 is out for CIML postal ballot with vote and comments due back in April 2011. To receive copies of these documents or to obtain more information on the work of this Subcommittee, please contact Mr. John Barton at (301) 975-4002 or john.barton@nist.gov.

The Secretariat is in the process of revising OIML R 50 "Continuous totalizing automatic weighing instruments (belt weighers)." The United States returned comments on the 3 CD of this Recommendation in July 2010, and participated in a meeting on R 50 in Teddington, United Kingdom, in April 2011. For more information on this effort, please contact Mr. John Barton at (301) 975-4002 or john.barton@nist.gov.

TC 17/SC 1 "Humidity" (China and United States)
The Co-Secretariats are working with a small IWG to revise OIML R 59 "Moisture meters for cereal grains and oilseeds." All drafts have been distributed to the USNWG, which for the most part is a subset of the NTEP Grain Sector. The 5 CD of OIML R 59 was distributed to the Subcommittee in February 2009. A preliminary 6 CD was developed based on international comments received on the 5 CD, and a meeting of TC 17/SC 1 was held in September 2010 in Orlando, Florida. Please contact Ms. Diane Lee at (301) 975-4405 or at diane.lee@nist.gov, if you would like to participate in this IWG.

TC 17/SC 8 "Quality Analysis of Agricultural Products" (Australia)
This Subcommittee was formed to study the issues and write a working draft document "Measuring instruments for protein determination in grains." Australia is the Secretariat. At a TC 17/SC 8 meeting hosted by NIST, the Subcommittee discussed comments concerning the maximum permissible errors (MPEs) and harmonization of the TC 17/SC 8 Recommendation for protein with the TC 17/SC 1 Recommendation for moisture. The Secretariat distributed a 2 CD of the document in February 2010. International comments on the 2 CD were received and compiled. These comments were discussed at a meeting of TC 17/SC 8 in September 2010 in Orlando, Florida. Please contact Ms. Diane Lee at (301) 975-4405 or at diane.lee@nist.gov, if you would like to participate in this IWG.

OIML Mutual Acceptance Arrangement (MAA)
The report on the OIML MAA can be found in the NTEP section of this document. For further information on the MAA and its implementation, please contact Dr. Charles Ehrlich at charles.ehrlich@nist.gov or at (301) 975-4834 or by fax at (301) 975-8091.

II. Report on the 45th CIML Meeting in Orlando, Florida, in September 2010

The International Committee of Legal Metrology (CIML) opened with an address given by Mr. Alan E. Johnston, CIML President.

The Committee expressed its appreciation for the strong level of interaction and cooperation between the BIML and the International Bureau of Weights and Measures (BIPM). The Committee asked the Director of the BIML to prepare a report on the relationship between the two Organizations to be presented to the 46th CIML meeting with a view to making key decisions on the relationship with the BIPM at the 14th Conference in 2012. This report should be mainly strategic in nature and should consider the point of view of the stakeholders of both organizations.

The Committee expressed its appreciation for the continued cooperation with the International Laboratory Accreditation Cooperation (ILAC) and the International Accreditation Forum (IAF). The Committee instructed the Bureau to pursue the joint work with ILAC and the IAF, also considering the future needs related to OIML acceptance and certification systems.

The Committee noted the OIML liaison with ISO and the IEC. The Committee also instructed the Bureau to pursue cooperation with ISO, to set up similar working relations with the IEC, and to convey relevant information on these issues to CIML Members.

The Committee noted the report on the liaison with the Technical Barriers to Trade Committee (TBT) of the World Trade Organization (WTO) and instructed the Bureau to maintain appropriate contacts with this Organization, and to convey relevant information on TBT issues to OIML Members.

The Committee noted a report on the liaison with CODEX Alimentarius (the international food code) and instructed the Bureau to: (1) continue to work towards ensuring consistency of OIML publications with those of CODEX; (2) examine additional fields of cooperation with CODEX other than prepackages; and (3) consult CIML Members before submitting any proposals to CODEX.

The Committee supports the organization of a seminar on the subject of Conformity to Type (CTT) and strongly encourages all member nations to actively contribute to this seminar. The Bureau was instructed to facilitate an electronic WG, chaired by the Member for New Zealand, with the objective of preparing the program for that seminar, taking into account the issues raised and the comments received by member nations. The United States will serve on this WG. The CIML postponed a decision on a proposal for a new Subcommittee on Conformity to Type until after the conclusions of the seminar on CTT are made available.

The Committee noted the re-confirmation of the following OIML Publications by their respective Technical Committees and Subcommittees (the United States serves as Secretariat for all of the technical committees responsible for these Recommendations):

- OIML R 92:1989 Wood moisture meters – Verification methods and equipment: general provisions;
- OIML R 127:1999 Radiochromic film dosimetry system for ionizing radiation processing of materials and products;
- OIML R 131:2001 Polymethylmethacrylate (PMMA) dosimetry systems for ionizing radiation processing of materials and products;
- OIML R 132:2001 Alanine EPR dosimetry systems for ionizing radiation processing of materials and products; and
- OIML R 133:2002 Liquid-in-glass thermometers.

The Committee instructed the Bureau to submit the Draft Revision of R 100 “Atomic absorption spectrometers for measuring metal pollutants in water” to direct CIML online approval.

The Draft Revision of OIML D 16 “Principles of assurance of metrological control” was submitted to the CIML for online ballot, but it did not receive sufficient support to be approved. Considering the comments made by the Netherlands and Norway as part of the online voting, the CIML requested that OIML TC 3/SC 2 prepare a revised Draft Revision of OIML D 16 with the assistance of the Netherlands and Norway. The revised Draft Revision will then be submitted for direct CIML online approval.

The Committee approved the project to revise:

- OIML D 29 “Guide for the application of ISO/IEC Guide 65” for the assessment of measuring instrument certification bodies in legal metrology, to be undertaken by OIML TC 3/SC 5 following the publication of ISO 17065, superseding ISO/IEC Guide 65.

The Committee approved the withdrawal of the OIML TC 11/SC 2 project on standardized thermocouples.

The *ad hoc* WG for the revision of the Directives for the technical work (OIML B 6-1), after several meetings, has not been able to reach consensus on a number of key issues. Considering the negative comments made by some member nations (especially comments from the United States) on several drafts of the revision of OIML B 6-1, the CIML instructed the Bureau to consult all CIML Members by way of an inquiry on their position with regard to specific issues, such as: the structure of the technical work, the proposed Technical Management Committee, and the voting procedures for the adoption of OIML Publications. The plan is that a new Draft Revision will be available to be considered for adoption by the CIML at its 46th Meeting.

The Committee took note of the information provided by the BIML Director concerning the report of the BIML financial and management audit that was done in February 2010 and the actions taken by the Bureau. The Committee instructed its President to send the report of this audit and the BIML Director's comments on that report to all CIML Members and to continue to follow up on this issue. The Committee instructed the Bureau to continue its efforts to increase the efficiency of its finances and management.

The Committee took note of the report on the pension system and of the comments made by Mr. Peter Mason, United Kingdom, and Dr. Philippe Richard, Switzerland. The Committee noted that the re-evaluated assets of the BIML cover much more than the value of the pension rights acquired, and that there will be no need to call for any additional Member State contributions to face this liability.

The Committee elected Mr. Peter Mason as its new CIML President. His six-year term will start at the opening of the 46th CIML Meeting in October 2011.

The Committee elected Dr. Roman Schwartz, Germany, CIML second Vice-President for a six-year term. His six-year term started immediately as the position was vacant

The Committee appointed Mr. Stephen Patoray, former NCWM NTEP Director, as the new BIML Director. The Committee confirmed its expectation that the commitment to be proficient in French will be a condition of Mr. Patoray's employment contract.

For their outstanding contributions to the development of international legal metrology, the Committee awarded OIML Medals to:

- Dr. Nicolai Zhagora of Belarus;
- Dr. Heinz Wallerus of Germany; and
- Mr. Brian Beard of South Africa

III. Future OIML Meetings

The Czech Republic will host the 46th CIML Meeting in Prague, Czech Republic. The meeting is planned for October 9 - 14, 2011.

The Committee expressed its thanks to Romania for its offer to host the 14th OIML Conference and 47th CIML Meeting in 2012.

IV. Regional Legal Metrology Organizations

Meeting of the Inter-American Metrology System (SIM), General Assembly, and the SIM Legal Metrology Work Group (LMWG)
The SIM General Assembly was held in Lima, Peru, during the last week of October 2009. Dr. Humberto S. Brandi, Director of Scientific and Industrial Metrology (SIM) at INMETRO Brazil, is the SIM President. Mr. Marcos Senna

mjsenna@inmetro.gov.br, also of INMETRO in Brazil, serves as the Chairman of the SIM Legal Metrology Work Group (LMWG). The organization is working to build capacity in legal metrology for SIM member countries. Please contact Mr. Ralph Richter at (301) 975-3997 or at ralph.richter@nist.gov for more information.

Asia-Pacific Legal Metrology Forum (APLMF)
The 17th Meeting of the Asia-Pacific Legal Metrology Forum (APLMF) was held September 13 - 16, 2010, in Victoria, British Columbia, Canada. The Peoples Republic of China holds the Presidency and Secretariat of the APLMF. Mr. Pu Changcheng, APLMF President and Vice-Minister of AQSIQ, chaired the meeting. The APLMF activities are facilitated through its seven work groups. The most active is the work group on Training Coordination chaired by Australia.

The main objectives of APLMF are to coordinate regional training courses in legal metrology and to provide a forum for exchange of information among legal metrology authorities. There were three training courses and one Workshop given by APLMF this year. T he training courses, covering requirements in select OIML Recommendations, and offered primarily to assist the developing countries in APLMF, were on gas meters, non-automatic weighing instruments (NAWIs) (weighbridges), and mass flow meters. There was also a workshop on Software Controlled Measuring Instruments. While feedback from the previously-held training courses has been positive, it is becoming clear that in order to continue to receive funding for the training, the APLMF needs to do a more thorough job of assessing and documenting the impact of the training courses on the economies that receive the training.

In June 2011, APLMF obtained funding for a new multi-faceted pilot project to significantly improve the accuracy and processes for metering liquid petroleum products in the Asia-Pacific region.

The United States was represented at the meeting in Victoria, British Columbia, by Dr. Charles Ehrlich, who serves as Chairman of the APLMF WG on Mutual Recognition Arrangements, and by Mr. Ralph Richter. Dr. Ehrlich gave an extensive report and update on the OIML MAA. Mr. Richter prepared and presented the United States Country Report. T he 2011 APLMF meeting is scheduled to be held in Busan, South Korea, during the first week of September 2011.

Appendix B

Report of the NCWM Associate Member Committee

July 18, 2011
Missoula, Montana

CALL TO ORDER

Chairman Robert Murnane called the meeting to order at 4:00 p.m.

MINUTES

A copy of the January 2011 meeting minutes was distributed. These minutes were reviewed and a motion was made by Mr. Tom McGee and seconded by Mr. Steve Langford to approve the minutes as written. With no further discussion, the minutes were approved.

FINANCIAL CONDITION

A copy of the financial report was distributed. Chairman Murnane reviewed the deposit/disbursements and reported a current balance of $18,425.73 as of June 30, 2011. A **motion was made and seconded to accept the Financial Report. With no other discussion, the Financial Report was accepted.**

BOARD OF DIRECTORS REPORT

Gordon Johnson, the Associate Membership Representative on the NCWM Board of Directors (BOD) gave a report concerning BOD activities. A few of the items are repeated below.

- VCAP, it was reported that load cell manufacturers have completed their audits with a few manufacturers in the final stages, but on track. The BOD reported considering Load Receiving Elements of 2000 lb and under using non-NTEP approved load cells as the next focus area.

- The Treasurer's report indicated that NCWM is in good financial condition and approved the 2012 budget as proposed.

- The BOD reported that the Online Forum was up and running in time for comments on the Annual Meeting agenda items. While the comments were light, there is no concern as this was the first year of the forum's use.

Gordon mentioned that additional information on the activities of the BOD can be found in the final Conference report.

PROFESSIONAL DEVELOPMENT COMMITTEE (PDC) REPORT

Mr. Steven Grabski, the Associate Membership Representative on the PDC gave a report about the Committee's activities. P rogress continues on the online testing and the Committee is planning to work with the Regional Associations on the idea of having one registration test for service personnel that is accepted by all states.

LAWS & REGULATIONS (L&R) COMMITTEE REPORT

Due to conflicting committee meeting times, Rob Underwood, the Associate Membership Representative was not able to provide his report on L&R activities.

ASSOCIATE MEMBERSHIP COMMITTEE (AMC) FUND DISBURSEMENT REPORT

Chairman Murnane reported that no new funds requests have been received. Chairman Murnane sent out a reminder e-mail and did receive some feedback on possible future requests.

FILLING VACANT POSITIONS

There were no vacant positions to fill; however, all members present were reminded that the position of the Chair, Vice Chair and the Secretary/Treasurer become vacant at the end of the 2012 Annual Meeting. These positions need to be filled during the AMC Meeting at the 2012 Interim Meeting

See the updated AMC Members and Officers list, located at the end of this document, for a complete list of AMC members.

CURRENT STANDING COMMITTEE REPRESENTATIVES

- Mr. Gordon Johnson, Gilbarco, represents the AMC on the Board of Directors. His term expires July 2013.
- Mr. Steven Grabski, Wal-Mart, represents the AMC on the Laws & Regulations Committee. His term expires July 2013.
- Mr. Rob Underwood, Petroleum Marketers represents the AMC on the Professional Development Committee. His term expires July 2013.

Chairman Murnane will work with the NCWM staff to update the Committee's information in the Conference report.

OLD BUSINESS

No old business to report.

NEW BUSINESS

Chairman Murnane proposed three changes to the Funds Request Approval Process document. The changes are proposed to better align the document with the AMC Bylaws. A copy of the proposed changes was distributed to members present for review. The proposed changes were:

1. Add the following sentence to the end of the "Procedure" paragraph. Training funds may also be approved throughout the year by using Article IV, Sections 3 and 4 of the Bylaws.

2. Modify sentence five in the section titled "AMC Training Fund Request Selection Criteria." Reasonable funding for travel and expenses will be considered, if it is necessary to acquire an "expert trainer" that would benefit a high number of weights and measures officials.

3. Add the following to the end of sentence five in the section titled "AMC Training Fund Request Selection Criteria." This would only be an option when qualified volunteers are not available.

These changes were reviewed, and a motion was made by Chairman Murnane and seconded by Mr. Tom McGee to accept the changes as written. With no further discussion, the changes were approved.

Richard Suiter commented on the struggling state budgets and how industry has more influence in this area than state personnel. Mr. Suiter suggested that the AMC consider helping in this area. Chairman Murnane suggested that the Committee could help in the development of a "Toolbox" containing various documents that weights and measures officials could pull from when meeting with their managers on budget issues. As this topic was also a discussion point with the BOD, it was suggested that Chairman Murnane present the AMC's interest in participating and/or supporting this type of effort.

ADJOURNMENT

With no further new business, Chairman Murnane adjourned the meeting at 4:42 p.m.

Respectfully submitted,

Mr. Darrell Flocken
Secretary

AMC MEMBERS AND OFFICERS EFFECTIVE JULY 18, 2011

Chair:	Mr. Bob Murnane
Vice Chair:	Mr. Chris Quay
Secretary/Treasurer:	Mr. Darrell Flocken

MEMBERS

Mr. Pete O'Bryan	2017
Mr. Paul Hoar	2012
Mr. Darrell Flocken	2013
Mr. Michael Gaspers	2013
Mr. Paul Lewis	2014
Mr. Robert Murnane	2014
Mr. Chris Guay	2015
Mr. Rob Underwood	2015
Mr. Steven Grabski	2015
Mr. Tom McGee	2015

INDIVIDUALS IN ATTENDANCE

Mr. Darrell Flocken – Mettler Toledo
Mr. Steven Grabski – Wal-Mart
Mr. Tom McGee – PMP Corporation
Mr. Gordon Johnson – Gilbarco, Inc.
Mr. Richard Suiter – R. Suiter Consulting
Mr. Michael Kerr – Southern Company
Mr. Louis Straub – Fairbanks Scales
Mr. Chris Bradley – Seraphin Test Measure
Mr. Paul Lewis – Rice Lake Weighing Systems
Mr. Jim Hewston – Scale Source
Mr. Stephen Langford – Cardinal Scale Manufacturing Company
Mr. David Calix – NCR
Mr. Henry Oppermann – W&M Consulting
Mr. Michael Keilty – Endress & Houser Flowtec

ASSOCIATE MEMBERSHIP COMMITTEE

Report of the Laws and Regulations (L&R) Committee

John Gaccione, Chairman
Westchester County, New York

Reference
Key Number

200 INTRODUCTION

This is the report of the Laws and Regulations Committee (hereinafter referred to as the "Committee") for the 96th Annual Meeting of the National Conference on Weights and Measures (NCWM). This report is based on the Interim Report offered in the NCWM Publication 16, "Committee Reports," testimony at public hearings, comments received from the regional weights and measures associations and other parties, the NCWM 2011 Online Position Forum, the addendum sheets issued at the Annual Meeting, and actions taken by the membership at the voting session of the Annual Meeting. The Informational items shown below were adopted as presented when this report was approved.

Table A identifies the agenda items and appendix items. The agenda items in the Report are identified by Reference Key Number, title, and page number. The first three digits of the Reference Key Numbers of the items are assigned from the subject series listed below. Voting items are indicated with a "**V**" after the item number. Items marked with an "**I**" are Informational. Items marked with a "**D**" are Developing items. The developing designation indicates an item has merit; however, the item is returned to the submitter for further development before any further action is taken by the Committee. Items marked "**W**" have been Withdrawn from consideration. Table B provides a list of acronyms used in this report, and Table C provides a summary of the results of the voting on the Committee's items and the report in its entirety.

This report contains recommendations to amend National Institute of Standards and Technology (NIST) Handbook 130, 2011 Edition, "Uniform Laws and Regulations," or NIST Handbook 133, "Checking the Net Contents of Packaged Goods," Fourth Edition (January 2011). Proposed revisions to the handbook(s) are shown in **bold face print** by ~~**striking out**~~ information to be deleted and **underlining** information to be added. New items proposed for the handbooks are designated as such and shown in **bold face print**. Text presented for information only is shown in *italic* print. When used in this report, the term "weight" means "mass."

Note: The policy of NIST is to use metric units of measurement in all of its publications; however, recommendations received by the NCWM technical committees have been printed in this publication as they were submitted and, therefore, some may contain only reference to inch-pound units.

Subject Series List

INTRODUCTION ..... 200 Series

NIST Handbook 130 (HB 130)– General ..... 210 Series
Uniform Laws ..... 220 Series
Weights and Measures Law (WML) ..... 221 Series
Weighmaster Law (WL) ..... 222 Series
Engine Fuels and Automotive Lubricants Inspection Law (EFL) ..... 223 Series

Uniform Regulations ..... 230 Series
Packaging and Labeling Regulation (PLR) ..... 231 Series
Method of Sale Regulation (MSR) ..... 232 Series
Unit Pricing Regulation (UPR) ..... 233 Series
Voluntary Registration Regulation (VRR) ..... 234 Series

Open Dating Regulation (ODR) ..... 235 Series
Uniform National Type Evaluation Regulation (UNTER) ..... 236 Series
Engine Fuels and Automotive Lubricants Regulation (EFR) ..... 237 Series

Examination Procedure for Price Verification ..... 240 Series

Interpretations and Guidelines ..... 250 Series

NIST Handbook 133 (HB 133) ..... 260 Series

Other Items ..... 270 Series

Table A
Index to Reference Key Items

Reference Key Number		Title of Item	Page
200		**INTRODUCTION**	**L&R - 1**
231		**UNIFORM PACKAGING AND LABELING REGULATION (UPLR)**	**L&R - 5**
231-1	W	HB130, Packaging and Labeling Requirements, Section 6, Declaration of Quantity: Consumer Products	L&R - 5
231-2	I	HB 130, Packaging and Labeling Requirements, 6.12. Supplementary Quantity Declarations and 6.14. Qualification of Declaration Prohibited.	L&R - 8
231-3	W	HB 130, Packaging and Labeling Requirements, Section 9. Prominence and Placement: Non-Consumer Packages	L&R - 9
231-4	W	HB 130, Packaging and Labeling Requirements, 10.4. Multi-unit Packages.	L&R - 10
232		**METHOD OF SALE REGULATION**	**L&R - 12**
232-1	I	HB 130, Method of Sale Regulation, Section 2.13.4. Declaration of Weight	L&R - 12
232-2	I	HB 130, Uniform Regulation for Method of Sale of Commodities – Packaged Printer Ink and Toner Cartridges	L&R - 16
232-3	V	HB 130, Method of Sale Regulation, Section 1.7.2. Pelletized Ice Cream	L&R - 20
232-4	V	HB 130, Method of Sale Regulation, Section 2.33. Vehicle Motor Oil	L&R - 21
237		**ENGINE FUELS AND AUTOMOTIVE LUBRICANTS REGULATION**	**L&R - 23**
237-1	I	HB 130, Engine Fuel Quality Requirements for Hydrogen	L&R - 23
237-2	I	HB 130, Definitions for Hydrogen Fuel for Internal Combustion Engines and Fuel Cell Vehicles	L&R - 28
237-3	I	Engine Fuels and Automotive Lubricants Regulation, Section 3.15. Biodiesel and Biodiesel Blends	L&R - 29
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Table B
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
AOSA	Association of Official Seed Analyst	NBB	National Biodiesel Board
API	American Petroleum Institute	NCWM	National Conference on Weights & Measures
ASTM	American Society for Testing and Materials International	NEWMA	Northeastern Weights & Measures Association
CFR	Code of Federal Regulations	NIST	National Institute of Standards & Technology
CNG	Compressed Natural Gas	OEM	Original Equipment Manufacturer
CWMA	Central Weights & Measures Assn.	P&G	Procter and Gamble
CRC	Coordinating Research Council	PALS	Packaging and Labeling Subcommittee
FALS	Fuels and Lubricants Subcommittee	PDP	Principal Display Panel
FDA	Food and Drug Administration	§	Section Symbol
FD&C Act	Food Drug and Cosmetic Act	SAE	Society of Automotive Engineers
FPLA	Fair Packaging and Labeling Act	SI	International System of Units
FSS	Fuel Specifications Subcommittee	SWMA	Southern Weights & Measures Association
FTC	Federal Trade Commission	TG	Task Group
HB 130	NIST Handbook 130, *Uniform Laws and Regulations in the areas of Legal Metrology and Engine Fuel Quality*	UPLR	Uniform Packaging and Labeling Regulation
HB 133	NIST Handbook 133, *Checking the Net Content of Packaged Goods*	U.S. EPA	U.S. Environmental Protection Agency
HDPE	High Density Polyethylene	USDA	U.S. Department of Agriculture
ISO	International Organization for Standardization	USNWG	U.S. National Work Group
L&R	Laws and Regulations	WG	Work Group
LLPD	Linear Low Density Polyethylene	WMD	NIST Weights & Measures Division
MLWG	Moisture Loss Work Group	WWMA	Western Weights & Measures Association

Table C
Voting Results

Reference Key Number	***House of State Representatives***		***House of Delegates***		***Results***
	Yeas	Nays	Yeas	Nays	
232-3	31	0	32	0	Passed
232-4	22	7	23	9	Failed
237-6	22	8	22	10	Failed
260-3	17	11	26	5	Failed

Details of all Items
(In order by Reference Key Number)

231 UNIFORM PACKAGING AND LABELING REGULATION (UPLR)

231-1 W HB130, Packaging and Labeling Requirements, Section 6, Declaration of Quantity: Consumer Products

(This item was Withdrawn.)

Source: Northeastern Weights and Measures Association (NEWMA)

Purpose: To allow manufacturers to develop multilingual labels. This item would permit manufacturers to use approved symbols on consumer packages.

Item Under Consideration: Amend HB 130 Packaging and Labeling Regulations, Section 6: Declaration of Quantity: Consumer Packages, addition to 6.4.1. Combination Declaration:

Numerical Count

Numerical count can be expressed as either:

(a) alpha-numeric characters (Figure A); or

(b) alpha-numeric characters in conjunction with an approved symbol of the commodity from Section 6.7.1 (Figure B).

3 Razors
(Figure A)


(Figure B)

Amend HB 130 Packaging and Labeling Regulations, Section 6: Declaration of Quantity: Consumer Packages, Section 6.7.1., Symbols and Abbreviations (Figure C).


Disposable Razor
(Figure C)

Background/Discussion: A representative of Procter and Gamble (P&G) submitted a proposal at the 2009 NEWMA Interim Meeting held in Springfield, Massachusetts. This proposal is to amend the language in HB 130 Packaging and Labeling Regulation, Section 6 that will facilitate value comparisons for a diverse set of consumers. It is proposed to amend the net content declaration of content for consumer products labeled only with a count, to allow for the use of approved symbols. According to P&G, this will limit the language of net content information, especially products with multi-language declarations, making the statement more noticeable to the eye. In addition, labels that are intended towards consumers whose first language is not English will benefit from knowing the content visually versus by text. P&G states that by ensuring the net content information is more noticeable; consumers will be more likely to make value comparisons.

P&G cites 21CFR 201.15 (c)(2); this requirement formally applies to over the counter drug products, but absent guidance for other categories of products subject to the Food Drug and Cosmetic Act (FD&C Act) and Food

Packaging and Labeling Act (FPLA). This provides the best guidance principles for manufacturers to develop compliant multilingual labels. P&G states that net content translation and package size considerations can make a compliant statement difficult to understand.

Language extracted from 21 CFR 201.15:

> (c)(1) All words, statements, and other information required by or under authority of the act to appear on the label or labeling shall appear thereon in the English language: *Provided, however,* that in the case of articles distributed solely in the Commonwealth of Puerto Rico or in a Territory where the predominant language is one other than English, the predominant language may be substituted for English.
>
> (2) If the label contains any representation in a foreign language, all words, statements, and other information required by or under authority of the act to appear on the label shall appear thereon in the foreign language.
>
> (3) If the labeling contains any representation in a foreign language, all words, statements, and other information required by or under authority of the act to appear on the label or labeling shall appear on the labeling in the foreign language.

At the 2009 NEWMA Interim Meeting held October 12 - 15, 2009, in Springfield, Massachusetts, the NEWMA L&R Committee recommended this proposal be a Developing item.

At the 2010 NCWM Interim Meeting held in Nashville, Tennessee, Mr. Chris Guay, P&G, provided an explanation that in Europe, products sold by count are using pictograms in the net content declaration and the package could be considered multi-language. This system would allow for industry to develop one package that can be used in several different countries without having to develop packaging for one specific language. An official urged that this be a Developing item to see if pictograms could be acceptable.

The Committee would like to see this item go through all the regions (NEWMA, CWMA, WWMA, and SWMA) for review and comment. The Committee requested from Mr. Guay, an approved set of international pictograms and further information on the labeling requirements (FPLA). The NIST Technical Advisor will also research the pictograms for any conflicts with other Federal Laws and Regulations. The NIST Technical Advisor met with the Federal Trade Commission (FTC) on February 26, 2010, to seek their assistance in reviewing this proposal. The L&R Committee agreed that this should be a Developing item.

At the 2010 NEWMA Annual Meeting held in Groton, Connecticut, in May 2010, there were no comments heard on this item. The NEWMA L&R Committee agreed that this item should remain as a Developing item until further information is made available. The NIST Technical Advisor has not heard back from FTC regarding this issue.

At the 2010 CWMA Annual Meeting held in Springfield, Illinois, in May 2010, an industry representative mentioned that there are several issues with this proposal: the Federal Drug Administration (FDA) will need to update labeling regulations, changing demographics, and international marketing of products requiring information in several languages. Regulations need to be put in place to either prohibit this practice or to establish guidelines and regulations. An inspector commented that the use of pictographs is currently in the marketplace, and it is considered a violation in their jurisdiction.

At the NCWM Annual Meeting held in St. Paul, Minnesota, on July 12 - 15, 2010, no comments were received on this item.

At the 2010 CWMA Interim Meeting held in Rock Island, Illinois, an industry representative provided an explanation that the use of pictographs is already appearing in the marketplace. Due to limited space restrictions on packages, pictographs are preferred over the use of multiple languages. It was commented that this is an acceptable practice in Europe, where several languages may be required on products. The CWMA L&R Committee

recommends that the NCWM L&R seek further guidance from FDA and FTC, and that this be an Informational item.

At the 2010 WWMA Annual Meeting held in Olympia, Washington, a manufacturer representative stated that several large manufacturers are currently using pictograms on packages. The representative is asking for guidance and language from the NCWM L&R as to the acceptable practice of using pictograms. A county and state official questioned how "acceptable" pictograms, if approved, would be controlled. Questions were raised on who would maintain, approve, and standardize these pictograms. They further stated that use of a pictogram should not replace current language for net quantity. The WWMA L&R Committee recommends that use of a pictogram be supplemental, if used, and not part of the net quantity statement. The WWMA L&R Committee would like to see additional information on the international use of pictograms. The WWMA L&R Committee recommends that this be a Developing item, in order for the NCWM L&R Committee to seek guidance from the FTC.

At the 2010 SWMA Annual Meeting held in Columbia, South Carolina, there were no comments heard during open hearings. The SWMA L&R Committee would like to see a database of approved pictographs, and would also like to know who would be responsible for updating, maintaining, and disseminating this information to the states. The SWMA L&R Committee recommends that this item move forward as a Developing item.

At the 2010 NEWMA Interim Meeting held in Norwich, Connecticut, there were no comments heard on this item. The NEWMA L&R Committee recommends that this be a Developing item.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, Mr. Chris Guay, P&G, stated that in Europe many products, sold by count, are using pictograms in the net content declaration. This type of packaging could be considered multi-lingual. There are currently packages in the U.S. marketplace, from Fortune 500 companies, that are using only icons on their packages to declare net quantities and no action is taken against those in violation. Mr. Guay explained that acceptance of this proposal would enable industry to develop one package that could be used in several different countries. Companies are modifying their approach in packaging in order to meet consumer needs. Mr. Guay remarked that currently the law suggests that icons cannot be used. Several visuals were presented of icons found in the marketplace, and the Committee agreed that the symbols used on the samples would most likely not be understood by consumers and they are confusing to what they are, mean, and represent.

The NIST Technical Advisor stated that if voted on and approved, a request for an "icon" database along with an approval system would need to be developed. A state official reported that the NCWM Board of Directors formed a Subcommittee identified as the Packaging and Labeling Subcommittee (PALS) under the L&R to address these types of issues. Mr. Guay was nominated to Chair this Subcommittee.

The L&R Committee believes the intent of the FPLA is to have the net contents statement on packing in the English language and does not allow for pictures, icons, and similar type declarations. The Committee recommends that the item be Withdrawn. The Committee further recommends that if Procter and Gamble decides to develop a similar proposal in the future that it be considered by the Packaging and Labeling Subcommittee (PALS) to determine if there is industry wide support for the use of symbols in lieu of text for the quantity declaration statement.

At the 2011 NEWMA and CWMA Annual Meetings, there were no comments heard on this item. Both regions recommended that this item be Withdrawn.

At the 2011 NCWM National Meeting held in Missoula, Montana, there were no comments heard on this item.

231-2 I HB 130, Packaging and Labeling Requirements, 6.12. Supplementary Quantity Declarations and 6.14. Qualification of Declaration Prohibited.

Source: Central Weights and Measures Association (CWMA)

Purpose: Provide clearer language to help guide industry and state officials when federal agencies are inconsistent in their interpretations, and this proposal provides better guidance.

Item Under Consideration:

6.12. Supplementary Quantity Declarations. – The required quantity declaration may be supplemented by one or more declarations of weight, measure, or count, such declaration appearing other than on a principal display panel. Such supplemental statement of quantity of contents shall not include any term qualifying a unit of weight, measure, or count that tends to exaggerate the amount of commodity contained in the package (e.g., "giant" quart, "larger" liter, "full" gallon, "when packed," "minimum," **"equivalent," "lasts the same as,"** or words of similar import).

6.14. Qualification of Declaration Prohibited. – In no case shall any declaration of quantity be qualified by the addition of the words "when packed," "minimum," or "not less than," **"equivalent," or "lasts the same as,"** or any words of similar import (e.g., "approximately"), nor shall any unit of weight, measure, or count be qualified by any term (such as "jumbo," "giant," "full," or the like) that tends to exaggerate the amount of commodity.
(Amended 1998)

Background/Discussion: Manufacturers are using the terms "equivalent" or "lasts the same as" to qualify net weight statements. Clearer language is needed to provide consumers with better information. Industries and state officials need better guidance for product labeling. Currently FTC does not consider the terms "equivalent," or "lasts the same as" exaggerated or misleading.

At the 2010 CWMA Interim Meeting, a state regulator presented an example of a label (refer to Appendix A) that was perceived as mislabeled. It was agreed that no conflicting information regarding the net weight statement should be in the lower one-third of the principal display panel (PDP). The CWMA L&R Committee recommends that this move forward as a Voting item.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, it was reported that this language was lifted straight out of the Fair Packaging and Labeling Act (FPLA), and if modified states could run into problems with their investigations. A NIST Technical Advisor stated that language "lasts the same as" or "equivalent" is in the marketplace, which may be misleading to consumers. The Committee was reminded that the lower 30 % should be free of supplementary quantity declarations as specified in Section 6.12 in the UPLR.

The Committee would like to see this issue go to all regions for comment. The NIST Technical Advisor remarked that the section was amended in 1998 to include the term "approximately" (which is not included in the Federal Regulations) as a prohibited term. There has been no indication that the differences between the UPLR and Federal Regulations are being challenged. It was also recommended that FTC be notified that this is an issue before the Conference. The Committee recommends that the item under consideration be Informational.

At the 2011 NEWMA Annual Meeting held in Saratoga Springs, New York, there was a recommendation to obtain additional data from the submitter of the proposal along with clarification from the Federal Trade Commission on their letter dated November 4, 2010 (refer to the Report of the 96th Annual NCWM Conference [SP1125, 2012], Appendix A). No additional comments were heard on this item. The NEWMA L&R Committee recommended that this item be Informational.

At the 2011 CWMA Annual Meeting held in Grand Rapids, Michigan, the submitter of the proposal commented that the terms "last the same as" and "equivalent to" are not quantity statements and should not be in the net quantity of the principle display panel area. The CWMA L&R Committee finds that this will be helpful for enforcement issues and recommended that this item be Informational.

At the 2011 NCWM National Meeting held in Missoula, Montana, there were no comments heard on this item. The Committee received a letter (refer to Appendix A) from Clorox, stating the term "lasts the same as" is being removed from their packaging. The Committee would like to receive additional input from the fall 2011 Regional meetings on this item.

231-3 W HB 130, Packaging and Labeling Requirements, Section 9. Prominence and Placement: Non-Consumer Packages

(This item was Withdrawn.)

Source: Western Weights and Measures Association

Purpose: Modify HB 130 – UPLR, Section 9.2. Prominence and Placement: Non-consumer packages, add a minimum height requirement.

Item Under Consideration:

Section 9. Prominence and Placement: Non-consumer Packages

9.1. General. – All information required to appear on a non-consumer package shall be definitely and clearly stated thereon in the English language. Any required information that is either in hand lettering or hand script shall be entirely clear and equal to printing in legibility.

9.2. Minimum Height of Numbers and Letters. – **The height of any letter or number in the quantity declaration on a non-consumer package shall not be less than that shown in Table 1 with respect to the area of the panel and the height of each number of a common fraction shall meet one-half the minimum height standards. When upper and lower case or all lowercase letters are used in SI symbols, it is the uppercase "L," lowercase "d," or their equivalent in the print or type that shall meet the minimum height requirement. However, no letter shall be less than 1.6 mm ($^{1}/_{16}$ in) in height. Other letters and exponents must be presented in the same type style and in proportion to the type size used.**

Background/Discussion: At the 2010 W WMA Annual Meeting, a county weights and measures official commented that same requirement for consumer and non-consumer packages should exist. They have found quantity declarations on non-consumer packages that were in a font size that was so small, it was easily missed. By requiring a minimum font size for the quantity declaration on these packages, weights and measures officials will have an easier time being able to evaluate labels for FPLA requirements and follow-up on short measure packages.

The NIST Technical Advisor noted that under the FPLA and U.S. Department of Agriculture (USDA) regulations, there are no minimum height requirements for non-consumer packages; this proposal raises the potential for conflict, which may result in federal preemption. It was also noted that defining the term "definitely and clearly stated" by a qualifying statement that it be a minimum 1.6 mm ($^{1}/_{16}$ in) in height could nullify its meaning. It was further mentioned that the term "definitely and clearly stated" affects free area, style of type or lettering, minimum height of letters and numbers, and proportion of numbers and letters for non-consumer packages. The WWMA L&R Committee recommends that this item move forward as a Voting item.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, the Committee agreed to withdraw this item over concern that its adoption would impose unjustified and costly new requirements on non-consumer packages. The new provisions would be in direct conflict with packaging and labeling regulations for non-consumer packages issued by the FTC, FDA, and USDA.

At the 2011 NEWMA and CWMA Annual Meetings, there were no comments heard on this item. Both regions recommended this item be Withdrawn.

At the 2011 NCWM Annual Meeting held in Missoula, Montana, there were no comments heard on this item.

231-4 W HB 130, Packaging and Labeling Requirements, 10.4. Multi-unit Packages.

(This item was Withdrawn.)

Source: Central Weights and Measures and Procter and Gamble

Purpose: Provide specific language and more than one way in defining the labeled net contents for multi-packs.

Item Under Consideration:

10.4. Multi-unit Packages. [*NOTE 7*, page 78] – Any package containing more than one individual "commodity in package form" (see Section 2.1. Package) of the same commodity shall bear on the outside of the package a declaration of:

(a) the number of individual units;

(b) the quantity of each individual unit; and

(c) the total quantity of the contents of the multi-unit package.

Example:
Soap bars, 6 Bars, Net Wt 100 g (3.53 oz) each
Total Net Wt 600 g (1.32 lb).

The term "total" or the phrase "total contents" may precede the quantity declaration.

A multi-unit package containing unlabeled individual packages which are not intended for retail sale separate from the multi-unit package, may contain, in lieu of the requirements of Section (a), a declaration of quantity of contents expressing the total quantity of the multi-unit package without regard for inner packaging. For such multi-unit packages, it shall be optional to include a statement of the number of individual packages when such a statement is not otherwise required by the regulations.

Examples:
Deodorant Cakes:
5 Cakes, Net Wt 113 g (4 oz) each, Total Net Wt 566 g (1.25 lb); or
5 Cakes, Total Net Wt 566 g (1 lb 4 oz)
Soap Packets:
10 Packets, Net Wt 56.6 g (2 oz) each, Total Net Wt 566 g (1.25 lb); or Net Wt 566 g (1 lb 4 oz); or
10 Packets, Total Net Wt 566 g (1 lb 4 oz)

(Amended 1993)

(d) <u>The net content statement for a multi-unit package may have either metric or inch pounds appear first. Since the secondary unit on the primary package is often a rounded value, the difference between primary and secondary declaration is multiplied by the number of individual units in the multi-unit package. Multi-unit product net content declarations may either multiply both primary and secondary units by the number of units in the multi-unit package or multiply the primary declarations by the number of units and convert (and round) this quantity.</u>

<u>(Added 201X)</u>

NOTE 7: *For foods, a "multi-unit" package means a package containing two or more individually packaged units of the identical commodity in the same quantity, intended to be sold as part of the multi-unit package but labeled to be individually sold in full compliance with this regulation. Open multi-unit retail food packages under the authority of the Food and Drug Administration or the U.S. Department of Agriculture that do not obscure the number of units or prevent examination of the labeling on each of the individual units are not*

required to declare the number of individual units or the total quantity of contents of the multi-unit package if the labeling of each individual unit complies with requirements so that it is capable of being sold individually. (See also Section 11.11. Soft Drink Bottles and Section 11.12. Multi-Unit Soft-Drink Bottles.)
(Added 1984)

Background/Discussion: This proposal was submitted by Mr. Guay with P&G. Mr. Guay is requesting a valid way for defining the labeled net contents for a multi-pack (multiples of the same product, packaged together). One approach allows for the inch-pound units and metric units from a single package to be multiplied by the number of packages within the multi-pack. Multiplying both values by the number of units compounds the rounding error of a single package. This would cause the content/weight statement to be inaccurate. However, this would be a consumer-friendly approach.

The second approach would allow the first declaration (either inch-pound units or metric units) from a single package to be multiplied by the number of packages in the multi-pack and the primary value is converted to the secondary unit. This approach is more accurate than the first approach.

Example of the net contents for 15 pack of Tide:

15 x 1.2 L =18.0 L =18000 mL

15 x 40 FL OZ = 600 FL OZ

18 L (600 FL OZ)

Or

18000 mL x 1 FL OZ divided by 29.5735 mL = 608.653 FL OZ

18 L (608 FL OZ)

Compare the two: 18 L (608 FL OZ) vs. 18 L (600 FL OZ)

At the 2010 CWMA Interim Meeting, the submitter of this proposal submitted the language in the section "Item under Consideration." He mentioned that they are being fined in some states for labeling issues. The CWMA L&R Committee recommends that the language submitted be considered by the NCWM L&R Committee.

At the 2010 WWMA Annual Meeting, a manufacturer stated that they have been fined by a state regarding the method used to calculate total net weight on multi-unit packages. The manufacturer stated that one method is consumer-friendly while the other is more accurate. The manufacturer is seeking input on the merit of this item before submitting specific language. A county official explained that whatever method is used, neither may overstate the actual net content. This historically has been the preferred method rather than requiring an exact conversion. The WWMA L&R Committee agrees that this is clearly permitted based on HB 130, UPLR, Section 6.13. Rounding that states, "in no case shall rounded net content declarations overstate a quantity; the packer may round converted values down to avoid overstating the net contents." The WWMA L&R Committee recommends that this item be Withdrawn.

At the 2010 SWMA Annual Meeting and the 2010 NEWMA Interim Meeting, both of these member states voted to recommend that this item be Withdrawn because existing guidance in HB 130 Section 6.13. is deemed sufficient to address the issue raised.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, Mr. Guay, P&G explained to the Committee that he submitted this proposal because of citations that they were receiving from one state. That state claimed that the product is less accurate with the current practice that P&G uses on their labeling. Mr. Guay stated his proposal will add additional guidance to current regulations. The Fair Packaging and Labeling Act (FPLA) requires dual units to be in inch-pound and metric (SI). When rounding the numbers, there is a considerable difference on multi-pack units. This item was considered at the meetings of two regional associations. Both regions determined that the

current language in HB130, Section 6.13. is adequate to address this issue. The Committee concurs with the conclusion of the regional association and withdrew this item.

At the 2011 NEWMA Annual Meeting held in Saratoga Springs, New York, there were no comments heard on this item. The NEWMA L&R Committee does not see a need to have such a proposal because there are regulations currently in place. NEWMA recommended that this item be Withdrawn.

At the 2011 CWMA Annual Meeting held in Grand Rapids, Michigan, there were no comments heard on this item. The CWMA L&R Committee recommended that this item be Withdrawn.

At the 2011 NCWM National Meeting held in Missoula, Montana, there were no comments heard on this item.

232 METHOD OF SALE REGULATION

232-1 I HB 130, Method of Sale Regulation, Section 2.13.4. Declaration of Weight

(This item was removed from Voting status, and the Committee determined that additional work needs to be done, and returned it to Informational status.)

Source: Western Weights and Measures Association (WWMA)

Purpose: Update HB 130, Section 2.13.4. to provide new density values for heavier density plastics that are currently in the marketplace.

Item under Consideration: Amend HB 130, Method of Sale Regulation, Section 2.13.4. as follows:

2.13.4. Declaration of Weight. – The labeled statement of weight for polyethylene sheeting and film products under Sections 2.13.1.1. Sheeting and Film, and 2.13.3.1. Bags, shall be equal to or greater than the weight calculated by using the formula below. The final value shall be calculated to four digits, and declared to three digits, dropping the final digit as calculated (for example, if the calculated value is 2.078 lb, then the declared net weight shall be 2.07 lb).

For SI dimensions:

M = T x A x D/1000, where:

M = net mass in kilograms
T = nominal thickness in centimeters
A = nominal length in centimeters times nominal width [***NOTE 6***, page 122] in centimeters
D = density in grams per cubic centimeter as determined by ASTM Standard D1505 68, Standard Method of Test for Density of Plastics by the Density Gradient Technique (or latest issue)

For the purpose of this regulation, **when D is not known,** the minimum density **(D) used to calculate the target net weight for linear low polyethylene products (LLPD) and products other than high density (HDPE)** shall be 0.92 g/cm^3 ~~**(when D is not known).**~~

For products labeled High Density (HDPE) or similar wording, the minimum density (D) used to calculate the target net weight shall be 0.95 g/cm³.

For inch-pound dimensions:

W = T x A x 0.03613 x D, where:

W = net weight in pounds;
T = nominal thickness in inches;
A = nominal length in inches times nominal width [***NOTE 6***, page 122] in inches;
D = density in grams per cubic centimeter as determined by ASTM Standard D1505 68, Standard Method of Test for Density of Plastics by the Density Gradient Technique (or latest issue); and 0.03613 is a factor for converting g/cm^3 to lb/in^3.

~~**For the purpose of this regulation, the minimum density shall be 0.92 g/cm^3.**~~
(Added 1977) (Amended 1980, 1982, 1987, 1989, 1990, ~~**and**~~ 1993**, and 201X**)

NOTE 6: *The nominal width for bags in this calculation is twice the labeled width.*

Background/Discussion: It was stated at the 2009 WWMA Annual Meeting in Los Cruces, New Mexico, that manufacturers and distributors of polyethylene bags are using the calculated target weight identified in HB 130 Section 2.13.4. to understate the net quantity of their labels. The polyethylene industry recognizes a density value of 0.92 g/cm³ for linear low density polyethylene (LLDP) products. When 0.92 g/cm³ is used to calculate the target net weight of high density polyethylene (HDPE), the product may make the target net weight. However, when the appropriate density value of 0.95 g/cm³ is used to test HDPE, the product often fails to meet the calculated target net weight. Further testing reveals than one or more of the labeled width, thickness, or count statements are inaccurate. It appears that some manufacturers are aware that weights and measures officials are restricted to testing HDPE product using the 0.92 g/cm³ value, because the actual density value is not stated on the product label. Existing procedural guidelines do not address HDPE materials. When testing at manufacturing locations, weights and measures officials are able to obtain information regarding the density of the product directly from the manufacturer. However, at distributor locations density information is not available and officials must test using the 0.92 g/cm³ value designated in HB 130 and HB 133 to verify the weight of the product. When the product has no net weight statement on the package, 0.92 g/cm³ is the only factor that the inspector may use to calculate the target net weight.

Initial proposal as submitted in 2009

Amend HB 130, Method of Sale Regulation, Section 2.13.4. as follows:

2.13.4. Declaration of Weight. – The labeled statement of weight for polyethylene sheeting and film products under Sections 2.13.1.1. Sheeting and Film, and 2.13.3.1. Bags, shall be equal to or greater than the weight calculated by using the formula below. The final value shall be calculated to four digits, and declared to three digits, dropping the final digit as calculated (for example, if the calculated value is 2.078 lb, then the declared net weight shall be 2.07 lb).

For SI dimensions:

M = T x A x D/1000, where:

M = net mass in kilograms
T = nominal thickness in centimeters
A = nominal length in centimeters times nominal width [***NOTE 6***, page 122] in centimeters
D = density in grams per cubic centimeter as determined by ASTM Standard D1505 68, Standard Method of Test for Density of Plastics by the Density Gradient Technique (or latest issue)

For the purpose of this regulation, **when D is not labeled on the package,** ~~**known,**~~ the minimum density **(D) used to calculate the target net weight for linear low density polyethylene products (LLPD) and products other than high density (HDPE)** shall be 0.92 g/cm^3 ~~**(when D is not known).**~~ **For products labeled High**

Density (HDPE) or similar wording, which does not specify the minimum density (D) on the package label, the minimum density (D) used to calculate the target net weight shall be 0.95 g/cm³.

For inch-pound dimensions:

W = T x A x 0.03613 x D, where:

W = net weight in pounds;
T = nominal thickness in inches;
A = nominal length in inches times nominal width [***NOTE 6***, page 122] in inches;
D = density in grams per cubic centimeter as determined by ASTM Standard D1505 68, Standard Method of Test for Density of Plastics by the Density Gradient Technique (or latest issue); and 0.03613 is a factor for converting g/cm^3 to lb/in^3.

~~**For the purpose of this regulation, the minimum density shall be 0.92 g/cm³.**~~
(Added 1977) (Amended 1980, 1982, 1987, 1989, 1990, ~~**and**~~ 1993**, and 201X**)

NOTE 6: *The nominal width for bags in this calculation is twice the labeled width.*

The 2009 WWMA Association supports the following item and recommends that it be a Voting item:

2.13.4. Declaration of Weight. – The labeled statement …

~~**For the purpose of this regulation, the minimum density shall be 0.92 g/cm³ (when D is not known).**~~
~~**For the purpose of this regulation, the minimum density shall be 0.92 g/cm³.**~~

Amend Section 2.13.4. Declaration of Weight as follows:

For the purpose of this regulation, **when D is not known,** the minimum density **(D) used to calculate the target net weight for linear low polyethylene products (LLDP) and products other than high density (HDPE)** shall be 0.92 g/cm³ ~~**(when D is not known)**~~**. For products labeled "High Density," HDPE, or similar wording, the minimum density (D) used to calculate the target net weight shall be 0.95 g/cm³.**

The NEWMA L&R Committee reviewed this item at its 2009 Interim Meeting and recommends that this proposal be a Developing item.

At the 2010 NCWM Interim Meeting held in Nashville, Tennessee, the Committee heard support for the density factor changing from 0.92 g/cm³ to 0.95 g/cm³ on this item. A California county commissioner indicated that the information provided by the WWMA was data extracted from Internet searches. Manufacturers are complaining that under current practice they cannot compete fairly.

Mr. Jackelen from Berry Plastics urged the Committee to reject this proposal. Mr. Jackelen stated that 0.92g/cm³ density currently works for manufacturers and that changing it to 0.95 g/cm³ will cause undue cost and waste. Most manufacturers do not make high density (HD) bags, but are producing blends. According to Mr. Jackelen, another reason to reject the proposal is if the 0.95 g/cm³ bag is punctured, it continues to tear.

A state official commented that if you use the term HD, then you are bound by the 0.95 g/cm³. If you use the length x width x thickness x density to determine the net weight, then the density value needs to be added on the package labeling. A state official said that manufacturers should consider disclosing the density factor on every product as part of the labeling. It was voiced that if there are questions about an absolute 0.95 g/cm³ density, then there should be an alternative.

Another state official commented that the 0.95 g/cm³ will be factored in only when the density is not known. The Committee received letters that were reviewed on this item. The Committee recommended moving the item under consideration forward as a Voting item.

At the 2010 NEWMA Annual Meeting in Groton, Connecticut, there was concern that there appears to be a lack of data on this item. It was never reviewed by all regions and also not presented to industry to seek comments. The NEWMA L&R Committee felt that this item was not an emergency and would like to review comments received from all the regions and industry.

At the 2010 CWMA Annual Meeting in Springfield, Illinois, the CWMA L&R Committee heard no comments on this item and recommends moving it forward as a Voting item.

At the 2010 NCWM National Meeting in St. Paul, Minnesota, the Committee heard from Mr. Jackelen (refer to Appendix B) who opposed this item and requested that it be Withdrawn. Mr. Jackelen believes this proposal will have a detrimental effect because can liners are made of natural gas and oil and the cost of these two items are increasing. Currently, the 0.92 g/cm³ is an established practice in industry and the marketplace, and is used to set the bottom weight Changing this density will cause confusion. Mr. Jackelen clarified that high density (HD) does not mean it is a better density. There are other linear bags that have higher quality than HD. As far as sustainability, if 0.95 g/cm³ is the established requirement it will cause an additional 12 million pounds of trash to be generated.

An official countered that the intent of this proposal is to provide the inspectors with information. There is fraud in the marketplace on these types of items and additional information is warranted. A director recommends that a minor amendment be done to the item under consideration, and insert "for products labeled HD when the D is not on the package label use 0.95 g/cm³." Also, use a similar statement "if the packer or manufacturer does not disclose the density then use 0.95 g/cm³." The director pointed out that it is not the role of the Conference to address quality issues, but to have a level playing field for inspectors to test a product. Another official remarked that companies need to identify their product on the container, and inspectors will use what density is disclosed.

The Committee received one letter asking for the withdrawal of this proposal and California submitted material safety data sheets from several companies (refer to Appendix B). The Committee considered comments received and agreed that more work was needed so the item was changed to Informational status.

At the 2010 CWMA Interim Meeting, there were no comments heard on this item. The CWMA L&R Committee recommends that this item remain Informational.

At the 2010 WWMA Annual Meeting, a state official commented that 10 companies have filed complaints concerning products being mislabeled, where the density was unknown. A state official submitted new language to replace a portion of language within the item under consideration. Two county officials spoke in support of the amended item, which would assist weights and measures officials in the field. A county official submitted a letter of support. The WWMA L&R Committee recommends that the amended language move forward as a Voting item. The WWMA L&R Committee also recommends that additional language be inserted for SI dimensions.

Amend Section 2.13.4. Declaration of Weight as follows:

> For the purpose of this regulation, **when D is not labeled on the package,** ~~**known,**~~ the minimum density **(D) used to calculate the target net weight for linear low density polyethylene products (LLPD) and products other than high density (HDPE)** shall be 0.92 g/cm^3 ~~**(when D is not known).**~~ **For products labeled High Density (HDPE) or similar wording, which does not specify the minimum density (D) on the package label, the minimum density (D) used to calculate the target net weight shall be 0.95 g/cm³.**

At the 2010 SWMA Annual Meeting held in Columbia, South Carolina, there were no comments heard on this item. The SWMA L&R Committee would like to seek additional comments from industry, other than material safety data sheets (refer to Appendix A in this report). The SWMA L&R Committee recommends that this item move forward as an Informational item.

At the 2010 NEWMA Interim Meeting held in Norwich, Connecticut, they noted that this proposal is confusing and that additional work needs to be done to clarify the impact of the proposed changes on manufacturers and consumers. The NEWMA L&R Committee recommends this move forward as a Developing item.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, Mr. Mike Jackelen, Berry Plastics, stated this item as written will have a detrimental effect on the industry due to the high cost of plastics. Mr. Jackelen further explained that high density plastics are of higher quality, but are of a thinner gauge which subjects it to tearing. A state regulator stated the WWMA recommended a change to the language for specifying that only when the density is not known or not labeled then the 0.95 g/cm³ would apply.

The Committee agreed that adding a requirement which gives the manufacturer the option of providing the actual density of the plastic provides flexibility for industry and will assist weights and measures officials to ensure the accuracy of quantity declarations. The Committee recommends the revised language under consideration from the WWMA move forward as a Voting item.

At the 2011 NEWMA and CWMA Annual Meetings, there were no comments heard on this item. Both regions recommended this item be a Voting item.

At the 2011 NCWM Annual Meeting held in Missoula, Montana, it was noted that there is a corresponding test procedure proposal on the agenda under Item 260-2. Mr. Mike Jackelen, Berry Plastics, stated that if such a proposal passes it would have a detrimental effect on the plastics industry. This product is currently being made from oil and gas, both of which prices have skyrocketed. By adopting the 0.95 g/cm³ density, an additional 12 million pounds of plastics would be added into the marketplace and ultimately landfills at current productions rates. Current industry practice is 0.92 g/cm³ for high density polyethylene. Introducing a change will only confuse the marketplace. A director spoke in support of this proposal saying it will give weights and measures officials a tool to check non-consumer packages. It was emphasized that "D" could be stated on the product, but, if not, officials need a density factor in order to conduct inspections. This director also reminded everyone that this issue is about accuracy and not quality. Another director expressed concern with the term "when D is not known." Currently 0.92 g/cm³ is the lower density rating, when "D" is not known, the proposed language will allow industry to use densities lower than 0.92 g/cm³. A letter from industry was received stating that 0.95 g/cm³ may not represent the density of HDPW currently in the marketplace (refer to Appendix B.). Industry indicated that 0.948 g/cm³ is a more accurate factor. The Committee believes that additional data from industry needs to be received on the density factors before proceeding with this item. The Committee returned this item back to Informational status.

232-2 I HB 130, Uniform Regulation for Method of Sale of Commodities – Packaged Printer Ink and Toner Cartridges

Source: Southern Weights and Measures Association (SWMA)

Purpose: This proposal is to clarify the labeling requirements for industry, consumers and weights and measures officials.

Item Under Consideration:

2.XX. Printer Ink and Toner Cartridges Labeling.

2.XX.1 Definitions.

2.XX.1.1. Printer ink cartridges – Any cartridge or module that contains ink or a similar substance in liquid form employed in the printing of documents, papers, pictures, etc., that is used in a printing device and designed to be replaced when no longer able to supply its contents in printing.

2.XX.1.2. Toner cartridges – Any cartridge or module that contains toner, powder, or similar non-liquid substance employed in the copying or printing of documents, papers, pictures, etc. that is used in a copying device and designed to be replaced when no longer able to supply its contents in printing and/or copying.

2.XX.2. Method of Sale and Labeling.

2.XX.2.1. Method of sale, printer ink cartridges. – All printer ink cartridges kept, offered, or exposed for sale or sold shall be sold in terms of the count of such cartridges and the fluid volume of ink in each cartridge, stated in terms of milliliters or fluid ounces.

2.XX.2.2. Method of Sale, toner cartridges. – All toner cartridges kept, offered, or exposed for sale or sold shall be sold in terms of the count of such cartridges, and the net weight of toner substance.

(Added 201X)

Background/Discussion: Over the past several years, there has been a change in the marketplace on inkjet and toner cartridges net content statements. Currently, there is little uniformity in the marketplace on this item, and the Committee is seeing some labels with a net content or with only a page yield count (e.g., prints 1000 pages). The NIST Weights and Measures Division (WMD) pointed out that according to guidelines printed in HB 130 from the Weights and Measures Law, Section 19 "information required on packages," these products are required to have the net contents of the ink (and toner) labeled, but manufacturers have resisted, claiming an exemption under the FPLA. The purpose of this proposal is to specifically clarify the requirements for industry, consumers, and weights and measures officials.

At the 2009 SWMA Annual Meeting in Clearwater, Florida, a Lexmark representative commented that they do not believe that a net content statement should be required, and that a page yield is sufficient. He read the main points of a letter from Lexmark to Mr. Max Gray, Director of Florida Agriculture and Consumer Services, dated March 17, 2009. The main points within the letter were: 1) the ink associated with a cartridge is a small fraction of the total cost of the print cartridge mechanism; 2) a page yield can provide a meaningful comparison to a consumer, if all manufacturers employ the same estimating assumptions and techniques; and 3) the International Organization for Standardization (ISO) studied this issue for years and has rejected reliance on ink volume or quantity; instead ISO has developed a yield, estimating and claiming methodology that permits cartridges to be compared using a consistent yardstick. Unlike ink volume measurements, page yield measurements provide a consumer with a reliable way to compare the amount of printing that can be expected. Lexmark also stated that ink is expressly exempt from labeling as provided by the FPLA 16 CFR 503.2(a).

An industry representative believes this issue does need to be discussed and reviewed further. However, many officials believe that consumers should know what they are getting. If it is determined that page count is the quantity statement, then the page print standard should be reviewed and have tighter standards. Mr. Gray felt that more data is needed from manufacturers on this issue.

The SWMA L&R Committee recommends the item for consideration for Developing by the NCWM L&R Committee.

At the 2010 Interim Meeting held in Nashville, Tennessee, the Committee heard testimony from Mr. Matthew Barkley, Hewlett Packard, regarding how the FPLA creates an exemption for ink, which extends to toner and ink cartridges. A declaration of weight and volume are not the best way for consumers to make value comparisons. Customers benefit from page count/yield. Mr. Barkley urges that this issue be Withdrawn. If this issue is to proceed, it should be Informational and a review of the FPLA exemption needs to be reviewed. Page yield is widely accepted and has repeatability measures.

Mr. Paul Jeran, Hewlett Packard, submitted a white paper (refer to Appendix C) from the Information Technology Industry Council (ITI). This white paper included manufacturers from Epson, Hewlett Packard, Kodak, and Lexmark. Mr. Jeran explained that his background is with ink and toner measurement. For the same volume of ink, two different systems of the same model cartridge from two different vendors can print a different number of pages. In order to determine the page yield, they are using the ISO/IEC methodology. ISO is currently working on a photo yield standard.

A state official expressed concerns with page yield being the standard page print for quantity. There is variation based on the type of cartridge, printer, and font and if graphics/photos are being printed. There is also a concern

with what ink cartridge refillers are doing. The Florida official reviewed the current practice of refillers, and they are listing on the labels the amount of ink. There are many manufactured packages in the marketplace, so value comparison to original equipment manufacturer (OEM) is critical. This is an expensive commodity and clarifications of the requirements are needed. A state official recommended that this item not be Withdrawn, but made Informational so additional information can be researched on this item. It is firmly believed that there needs to be a consistency with the declaration statement on these types of items. A consumer stated that he believes the net content needs to be stated with voluntary supplemental information for page yield. Some voiced their opinion that consumers need to know page yield in order to make a value comparison. The NIST Technical Advisor stated that under the FTC regulations ink and toner cartridges were not part of the CFR. NIST met with the FTC on February 26, 2010, to request clarification of the exemption. According to the Committee, there needs to be a test procedure for verification of net content developed for ink and toner cartridges. The Committee recommends that this item be made Informational until they can receive clarification from the FTC, review ISO standards, and determine what refillers' current practices are.

At the 2010 NEWMA and the CWMA Annual Meetings, both Associations received a presentation from Mr. Stephen Pociask from American Consumer Institute, regarding a lack of consumer information when purchasing computer printers and cartridges. Both Associations expressed that there are still many unanswered questions and would like to hear from manufacturers of ink and toner cartridges. Both Associations are recommending that this be an Informational item.

At the 2010 Annual Meeting held in St. Paul, Minnesota, Mr. Pociask, presented a study done by his organization. It was asked who initially requested the study and who funded it. Mr. Pociask stated that the study was done back in 2007, with funding by a telemarketing research company.

A Weights and Measures Official expressed concern that the study presented was not clear; is page count based on certain fill levels or declaring the weight on the cartridge itself? Mr. Pociask responded that currently Quality Logic uses the ISO standards. He also concluded that net weight is easy to enforce. Mr. Pociask stressed that his focus is to provide information that give consumers useful information in purchasing printers and the life cost of the printer, including printer ink cost.

Another official stated that the study was interesting, but would like to hear from manufacturers. There are several issues; cartridges are only for specific printers, when comparing price per page you suggest that price is static, and ink cartridge refillers need to be addressed.

Mr. Joshua Rosenberg, IT Industry Council (ITI), agreed that providing consumers with information is meaningful, however; relevant to the consumer is the number of pages that can print. The ISO standards are a good tool, but will lead to customer confusion. Mr. Rosenberg expressed that there is a lot more that needs to be discussed on this issue (refer to Appendix C).

At the 2010 Annual Meeting, the Board of Directors established a Task Group (TG) for the Printer Ink and Toner Cartridges to review and obtain additional information from all stakeholders. Ms. Vicky L. Dempsey, Chief Inspector, Montgomery County, Ohio will Chair this group and Lisa Warfield will be the NIST Technical Advisor.

At the 2010 CWMA Interim Meeting, Ms. Dempsey, Chairperson for the TG on Printer Ink and Toner Cartridges announced her resignation to the Association. Ms. Dempsey gave a briefing on this issue, in particular whether this particular form of ink is included in the exemption of the FPLA. It was indicated that FDA believes this exemption only applies to ink in pens, not in printer cartridges. Regulators commented that "yield' is more important for cost comparison for consumers; however, other regulators felt that "yield" is not a weights and measures issue. Another concern was that the ISO yields are based upon approximations. Discussion also included whether regulators would have to purchase printers in order to verify yield. It was generally agreed that this is a very complicated matter, and the method of sale needs to be measurable. A regulator stated he had spoken with a manufacturer and questioned how the packages are filled. The response indicated that packages are filled by volume.

The CWMA L&R Committee supports the efforts of a TG for the Printer Ink and Toner Cartridges to gather more information for development of this proposal.

At the 2010 WWMA Annual Meeting and the 2010 NEWMA Interim Meeting, it was announced that NCWM is seeking a chairperson for the Printer Ink and Toner Cartridges TG. The CWMA and WWMA are recommending that this item move forward as Informational.

At the 2010 SWMA Annual Meeting, it was announced that a chairperson is needed for the TG on Printer Ink and Toner Cartridges. The SWMA L&R Committee does not endorse the formation of an Ink and Toner TG to resolve this issue. Only within the past couple years have manufacturers changed their declaration statement to read "yield." Allowing the declaration by yield will open the door for other commodities to change their labeling (e.g., loads of laundry). T he SWMA L&R Committee recommends that these commodities be sold by volume and weight; however, they are not opposed to yield being a supplementary statement. This will allow for inspectors to verify the net contents, and also provide information for consumers to make value comparisons. The SWMA L&R Committee would like to seek additional information from industry and ink refillers. A recommendation was made for the item under consideration move forward as a Voting item.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, the Ink and Toner Cartridge WG held its first work session. There was discussion on the current forms and types of printer ink. Industry also explained that they are able to deliver less ink with a better print quality. As a result, they refrain from using the net content statement but feel that a page yield is more useful information for a consumer in making comparisons. Industry was informed that yield is not acceptable and they cannot use words like "approximate" and "estimated." It was agreed that yield could be a supplementary statement on the package.

The Ink and Toner WG requested additional information from industry in regards to:

1. How the ISO standard works, and how this standard fits into the weights and measures test procedure.

2. How is print darkness measured?

3. An explanation as to why manufacturers removed the net weight declaration from packages and replaced it with a page yield?

4. When changing formulas, is the toner receptacle resubmitted back through the ISO standards to validate the page print accuracy?

Industry agreed to prepare a presentation to address these concerns at the Ink and Toner WG to be held in July 2011.

The Committee recommends that this item be Informational.

At the 2011 NEWMA Annual Meeting held in Saratoga Springs, New York, there were no comments heard on this item. The Committee Chair reminded members that the Printer and Toner WG will be meeting on the Sunday prior to the start of the NCWM Annual Meeting, and that industry will be giving a presentation. The NEWMA L&R Committee recommended that this item move forward as an Informational item.

At the 2011 CWMA Annual Meeting held in Grand Rapids, Michigan, there were several comments heard on this item. Concern was expressed that ink cartridges used to have quantity on the label, but now, in the marketplace, only yield is used for labeling. A state director expressed concern that ink refillers are not being addressed under this proposal. The CWMA L&R Committee recommended that this item move forward as an Informational item.

The Printer Ink and Toner Cartridge WG met on Sunday, July 17, 2011, at the NCWM Annual Conference in Missoula, Montana. T his workgroup was attended by several members of state, county, and city weights and measures officials as well as members of industry. Mr. Josh Rosenberg, with the Information Technology Industry Council (ITI), and other members of the printer industry gave a presentation outlining their viewpoints using yield as the method of sale for their products. The printer industry representatives were asked questions regarding the amount of product each cartridge held and all agreed their respective companies were aware of the net contents of each container. A stakeholder stated that packages must have the weight, measure, or count – no other type of labeling is acceptable. Industry was also informed that "yield" is not an acceptable means of labeling for any product.

The Ink and Toner WG will meet at the NCWM 2012 Interim meeting in New Orleans. The printer industry was asked to consolidate their presentation to only address the labeling issue of their products and address the WG with this information. Also, the Printer Ink and Toner Cartridge WG plans to make a proposal to the NCWM L&R Committee for a method of sale for packaged printer ink and toner cartridges.

During the open hearings at the 2011 NCWM Annual Meeting, Mr. Rosenberg, with ITI (also representing Lexmark, HP, Kodak, Epson and Brother), entered their Sunday presentation for the record (refer to Appendix C.) Mr. Rosenberg remarked that a label by volume or weight does not meet the objectives of their organization or consumers' preference. Mr. Rosenberg believes that yield is the best way to enable consumers to make informed purchase decisions. He further believes there is a way to provide information through yield data and the ability to apply the ISO standard for yield. Mr. Rosenberg stated they will be in attendance at the upcoming regional meetings to address any issues or concerns. A stakeholder noted that he does not believe the ISO yield standard is acceptable, due to the default system of each manufacturer's printer being different. He also pointed out that NCWM is not a performance based evaluation agency, and encourages the Ink and Toner WG to develop an item based on the use of weight or volume as the unit of measure.

The Committee would like to see additional work from the Printer Ink and Toner WG.

Ms. Maureen Henzler, Kansas, is the Chairperson for the WG on Printer Ink and Toner Cartridges. If you are interested in participating in this TG, e-mail Ms. Henzler at maureen.henzler@kda.ks.gov or Lisa Warfield, NIST, at lisa.warfield@nist.gov.

232-3 V HB 130, Method of Sale Regulation, Section 1.7.2. Pelletized Ice Cream

(This item was adopted.)

Source: NIST Weights and Measures Division, International Dairy Foods Association, Food and Drug Administration (FDA)

Purpose: Provide a method of sale for pelletized frozen desserts in accordance with FDA's August 2010 statement.

Item Under Consideration:

1.7.1. Factory Packaged Ice Cream and Similar Frozen Products. – Ice cream, ice milk, frozen yogurt, and similar products shall be kept, offered, or exposed for sale or sold in terms of fluid volume.
(Amended 1995)

1.7.2. Pelletized Ice Cream <u>and Similar Pelletized Frozen Desserts</u> – A semi-solid food product manufactured at very low temperatures using a nitrogen process and consisting of small beads of varying sizes. Bits of inclusions (cookies, candy, etc.) that also vary in size and weight may be mixed with the pellets.

1.7.2.1. Method of Retail Sale – Packaged pelletized ice cream **<u>or similar pelletized frozen desserts</u>** shall be kept, offered, or exposed for sale on the basis of net weight.

Note: The method of sale **<u>for pelletized ice cream</u>** shall be enforceable after April 17, 2010**<u>, and after August 2, 2011, for similar pelletized frozen desserts.</u>**

(Added 2010) **<u>(Amended 20XX)</u>**

Background/Discussion: In a letter from the FDA (refer to NCWM 2010 Interim Meeting, L&R Agenda, Appendix D), a statement was issued that the net quantity of content statement on pelletized frozen desserts, in addition to pelletized ice cream, conform to the standards for frozen desserts in 21 CFR Part 135. Nonstandardized frozen desserts that are similar to the standardized frozen desserts in 21 CFR Part 135 should be declared in terms of net weight. The FDA expects manufacturers of these pelletized frozen desserts to revise their labels to reflect a net

weight declaration during the next package printing cycle and encourage all marketers of pelletized frozen desserts to modify their labels with a net weight declaration within one year from the issue date (August 2011).

At the 2010 fall regional meetings, there were no comments heard on this item. All four Associations have recommended that this item move forward as a Voting item.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, there were no comments heard on this item. The Committee recommends that the item move forward as a Voting item.

At the 2011 NEWMA and CWMA Annual Meetings, there were no comments heard on this item. Both regions are recommending this item be a Voting item.

At the 2011 NCWM Annual Meeting held in Missoula, Montana, there were no comments heard on this item.

232-4 V HB 130, Method of Sale Regulation, Section 2.33. Vehicle Motor Oil

(This item was returned to committee on a split vote.)

Source: Central Weights and Measures Association

Purpose: Adopt a method of sale in HB 130 for vehicle motor oil. There is a corresponding Fuels and Automotive Lubricants Regulation to require detailed invoicing requirements. Some oil facilities may not deliver the advertised oil, so consumers may be receiving lower quality oil than what is specified. It is being recommended that retailers that provide oil change services be required to provide consumers with a document that lists the oil's manufacturer, brand name, SAE viscosity, and service requirements as defined in API 1509, SAE J183, or ASTM D4485.

Item Under Consideration:

2.33. Oil.

2.33.1. Labeling of Vehicle Motor Oil.

2.33.1.1. Viscosity. – The label on a vehicle motor oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank shall contain the viscosity grade classification preceded by the letters "SAE" in accordance with the SAE International's latest version of SAE J300, Engine Oil Viscosity Classification.

2.33.1.2. Intended Use. – The label on a vehicle motor oil container shall contain a statement of its intended use in accordance with the latest version of SAE J183, Engine Oil Performance and Engine Service Classification (Other than "Energy Conserving").

2.33.1.3. Brand – The label on a vehicle motor oil container and the invoice or receipt from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank shall contain the name, brand, trademark, or trade name of the vehicle motor oil.

2.33.1.4. Engine Service Category. – The label on a vehicle motor oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank shall contain the engine service category, or categories, met in letters not less than 3.18 mm ($^{1}/_{8}$ in) in height, as defined by the latest version of SAE J183, Engine Oil Performance and Engine Service Classification (Other than "Energy Conserving") or API Publication 1509, "Engine Oil Licensing and Certification System."

2.33.1.4.1. Inactive or Obsolete Service Categories. – The label on a vehicle motor oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with SAE J183, Appendix A, whenever the vehicle motor oil in the container or in bulk does not meet an active API service category as defined by the latest version of SAE J183, Engine Oil Performance and Engine Service Classification (Other than "Energy Conserving").

2.33.1.4.2. Tank Trucks or Rail Cars. – Tank trucks, rail cars, or other types of delivery trucks that are used to deliver vehicle motor oil are not required to display the SAE viscosity grade and service category or categories as long as the bill of lading or other documentation provides that information.

All references to invoice or receipt will be enforceable effective on July 1, 2012.
(Added 201X)

Background/Discussion: At the 2011 NCWM Interim Meeting in Dallas, Texas, it was pointed out that if Item 237-6, HB 130 Engine Fuels and Automotive Lubricants Regulation, Section 3.13.1. Labeling of Vehicle Motor Oil was adopted by the Conference it would require a corresponding method of sale. It was also noted that this method of sale is important to consumers and stakeholders because not all of the states adopt the Engine Fuels and Lubricants Regulation.

2.33. Oil.

2.33.1. Labeling of Vehicle Motor Oil.

2.33.1.1. Viscosity. – The label on a vehicle motor oil container, receptacle, dispenser, or storage tank and the invoice from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank shall contain the viscosity grade classification preceded by the letters "SAE" in accordance with the SAE International's latest version of SAE J300.

2.33.1.2. Intended Use. – The label on a vehicle motor oil container shall contain a statement of its intended use in accordance with the latest version of SAE J183.

2.33.1.3. Brand – The label on a vehicle motor oil container and the invoice from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank shall contain the name, brand, trademark, or trade name of the vehicle motor oil.

2.33.1.4. Engine Service Category. – The label on a vehicle motor oil container, receptacle, dispenser, or storage tank and the invoice from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank shall contain the engine service category, or categories, met in letters not less than 3.18 mm ($^{1}/_{8}$ in) in height, as defined by the latest version of SAE J183 or API Publication 1509, "Engine Oil Licensing and Certification System."

2.33.1.4.1. Inactive or Obsolete Service Categories. – The label on a ve hicle motor oil container, receptacle, dispenser, or storage tank and the invoice from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with SAE J183, Appendix A, whenever the vehicle motor oil in the container or in bulk does not meet an active API service category as defined by the latest version of SAE J183.

2.33.1.4.2. Tank Trucks or Rail Cars. – Tank trucks, rail cars, or other types of delivery trucks that are used to deliver vehicle motor oil are not required to display the SAE viscosity

grade and service category or categories as long as the bill of lading or other documentation provides that information.

(Added 201X)

The Committee recommends this item move forward as a Voting item.

At the 2011 NEWMA Annual Meeting held in Saratoga Springs, New York, membership reviewed the proposal under the background/discussion, and it was noted that the title to the SAE and API standard would be noted. It was also noted to change the word "motor" to "engine." A representative from API did not object to these changes. The NEWMA L&R Committee recommended that this item move forward as a Voting item.

At the 2011 CWMA Annual Meeting held in Grand Rapids, Michigan, there was support from API and a state representative. The CWMA L&R Committee recommended that this item move forward as a Voting item.

At the 2011 NCWM Annual Meeting held in Missoula, Montana, the FALS and L&R Committee received a letter from the Independent Lubricant Manufacturers Association (ILMA) in support of this and a corresponding proposal Item 237-6 (refer to Appendix G.) The FALS group believes this has unanimous support. It was noted that the SAE and API standards technical title would be editorially placed in the proposal. It was agreed that the term "motor" would not change to "engine." A representative of API stated that bulk oils are the weak link in the property chain. A State representative expressed concern with the cost and training for testing the "brand." API responded that the brand name is a critical part of the traceability. API does have a licensing program for engine oil but, without knowing the brand name, it would be hard to determine compliance with any specifications. Several state regulators supported this proposal because of significant problems in the industry. It was also emphasized that industry wants this as well as the weights and measures regulatory community. It was mentioned that some car manufacturers will void a warranty unless a specific brand is used. The FALS Chairperson supports this proposal so that producers can guarantee their product and enforce mislabeling.

During the voting session, a state regulator agreed that brand helps with traceability, but he believes the labeling requirement should be limited to specification. Several states stated they would support this item only if Section 2.33.1.3. Brand was removed from the proposal.

237 ENGINE FUELS AND AUTOMOTIVE LUBRICANTS REGULATION

237-1 I HB 130, Engine Fuel Quality Requirements for Hydrogen

Source: Western Weights and Measures Association (WWMA)

Purpose: Adopt engine fuel quality requirements for hydrogen in HB 130 to address gaseous hydrogen refueling applications.

Item Under Consideration: The U.S. National Work Group (USNWG) Fuel Specifications Subcommittee (FSS) presented the following recommendation for consideration.

Table 1. Hydrogen Fuel Quality Specifications*						
Constituent		**99.97**	**Unit**	**Limit**	**Test Method(s)**	**Responsible Standards Committee and Status of test method**
Standard Practice for Gaseous Sampling					**ASTM D7606-11**	
1	Hydrogen Fuel Index		%	Minimum	(a)	
2	Total Allowable Non-Hydrogen, Non-Helium, Non-Particulate	100.0	ppm v/v	Maximum	(b)	
3	Total Non-Hydrogen Gases	300.0	ppm v/v	Maximum	(c)	
4	Ammonia	0.1	ppm v/v	Maximum	ASTM D7653-10	
5	Carbon Dioxide	2.0	ppm v/v	Maximum	ASTM D7653-10 ASTM D7649-10	
6	Carbon Monoxide	0.2	ppm v/v	Maximum	ASTM D7653-10	
7	Formaldehyde	0.01	ppm v/v	Maximum	ASTM D7653-10	
8	Formic Acid	0.2	ppm v/v	Maximum	ASTM D7550-09 ASTM D7653-10	
9	Helium	300.0	ppm v/v	Maximum	ASTM D1945-03	
10	Nitrogen and Argon	100.0	ppm v/v	Maximum	ASTM D7649-10	
11	Oxygen	5.0	ppm v/v	Maximum	ASTM D7649-10	
12	Particulate Concentration	1.0	mg/kg	Maximum	ASTM D7650-10 ASTM D7651-10	
13	Total Halogenated Compounds	0.05	ppm v/v	Maximum	to be specified	WK 23815 under ASTM D03.14
14	Total Hydrocarbons	2.0 (d)	ppm v/v	Maximum	ASTM D7675-11	
15	Total Sulfur Compounds	0.004	ppm v/v	Maximum	ASTM D7652-11	
16	Water	5.0	ppm v/v	Maximum	ASTM D7653-10 ASTM D7649-10	

Table 1.
Hydrogen Fuel Quality Specifications*

Footnotes to Table 1:

a. Hydrogen fuel index = Sum of all non-hydrogen gases (as % of sample) subtracted from 100 %.
b. Total Allowable Non-Hydrogen, Non-Helium, Non-Particulate = Sum of all constituents listed on the table, except hydrogen, helium, and particulates.
c. Total Non-Hydrogen Gases = Sum of all constituents listed on the table except hydrogen and particulates.
d. Total Hydrocarbons may exceed 2 ppm v/v only due to the presence of methane, provided that the total gases do not exceed 300 ppm v/v.

*The FTC's Fuel Rating Rule (16 CFR Part 309, see the requirements in "Labeling of Alternative Fuels" at http://www.ftc.gov/bcp/edu/pubs/business/autos/bus29.shtm); requires dispensers to bear a declaration of the minimum percent of hydrogen determined according to test methods described in "Standard Test Method for Analysis of Natural Gas by Gas Chromatography (ASTM D1946).

Updated 7/12/2011

Specification for Hydrogen Fuel: The FSS identified several quality criteria where there was tentative agreement with their associated values (see properties 6, 7, 8, 9, 12, 14, and 16 which are highlighted in green) in the proposed Table 1. Hydrogen Fuel Quality Specification. When a quality property and numerical value (defining a maximum or minimum limit) is added to the specification, appropriate test methods must then be identified. As test methods are identified and adopted by the FSS, they will be added to column 6 (test methods) in Table 1. The FSS did not agree on all of the properties contained in the DMS proposal because there was either not enough research data or test methods available to support a decision (see properties 1, 2, 3, 4, 5, 10, 11, 13, and 15 which are highlighted in yellow) in Table 1 below. These and perhaps other properties will receive further consideration by the FSS and may be added to the quality standard in the future when such action is supported by research.

In April 2009, at the USNWG on hydrogen meeting held in Sacramento, California, they further refined the definitions for hydrogen vehicle fuel based on work by SAE International. The definitions were modified to include more technically correct language, and the text is in alignment with the widely recognized "Bosch Automotive Handbook." In January 2010, a column was added to Table 1 to reflect the responsible standards committee and the status of the test method.

Background/Discussion: Twenty-four states have hydrogen refueling dispensers in operation. Hydrogen stations using permanent and mobile refueling systems for automobiles, fleet vehicles (buses), forklifts, and airport totes are increasing and may go unnoticed. Many stakeholders, who are not familiar with the weights and measures standards process, will need to participate at this stage before it becomes a commercial application. This effort by the USNWG for the Development of Commercial Hydrogen Measurement Standards is to ensure there are appropriate standards and test procedures in place in time for dispenser manufacturers, service agencies, and officials to educate the general public, not if, but when, retail hydrogen applications become commercially available.

Existing codes do not fully address hydrogen refueling applications because of hydrogen's properties and other technical differences in the setup and operations of dispensing systems. The development of legal metrology standards for newly emerging hydrogen technology is a necessary component of the hydrogen infrastructure. The weights and measures community must have time to consider requirements for hydrogen-refueling systems before this application is available for public access at corner service stations.

The USNWG brought proposals for equipment, method of sale, and fuel quality requirements before the weights and measures community to share this information about upcoming standards for an emerging technology. The simultaneous development of the code and corresponding test procedures, will allow for input from the weights and measures and hydrogen communities, appropriate trials of the standards, and to address all areas of concerns early in the standards development process.

This item was reviewed at the WWMA and SWMA 2008 Annual Meetings and at the NEWMA 2008 Interim Meeting. NEWMA members generally discussed the "hydrogen issue" and its usage in the marketplace. It is anticipated that hydrogen at first will be relegated to "fleet vehicles" (such as compressed natural gas [CNG]), and that retail sales will be slow in coming to the marketplace. These Associations are recommending this item remain a Developing item.

At the 2009 Interim and Annual Meetings, the NIST Technical Advisor briefed the Committee on work that the USNWG FSS has done to date (refer to Appendix J in the "Report of the 94th NCWM" [SP 1099, 2009]).

There were no comments heard on this proposal at the CWMA 2009 Interim Meeting.

At the WWMA 2009 Annual Meeting held in Los Cruces, New Mexico, industry representatives acknowledged that some details of the specifications for fuel standards are in development. The WWMA L&R Committee believes it is best to be proactive on this item so that Hydrogen stations can be ready to make retail sales.

At the SWMA 2009 Annual Meeting, a state recommended that as the test methods are developed they get published. It also requested that documentation be produced on the effects of hydrogen if they exceed certain property values listed in the table "Hydrogen Fuel Quality Specification," and why this is important in the testing of hydrogen.

NEWMA reviewed this proposal at their 2009 Interim Meeting and recommends leaving this as a Developing item.

At the NCWM 2010 Interim Meeting, the NIST Technical Advisor provided an updated Table 1. Hydrogen Fuel Quality Specification (refer to L&R Appendix B in the "Report of the 95th NCWM" [SP 1115, 2010]) that amends the chart to identify which Standards Committee is actively working on the test method under development.

At the 2010 NEWMA and CWMA Annual Meeting, no comments were received on this item and both Associations are recommending that this item move forward as an Informational item.

At the 2010 NCWM Annual Meeting in St. Paul, Minnesota, Mr. Jennings, Tennessee, informed the Conference that the American Society for Testing and Materials International (ASTM) is actively working on a hydrogen specification. Until further developed by ASTM, there is nothing that can be done on this item. Mr. Jennings would also like to provide users with information on what the significance is of each property.

At the 2010 CWMA Interim Meeting in Rock Island, Illinois, a representative of the USNWG provided an update on ASTM efforts to establish test methods. An industry representative provided information that some of the specifications of the SAE standard contained parameters that could not be measured by the current test methods. A ballot cannot take place at ASTM until these test methods are established, and test methods will take some time to develop. The CWMA L&R Committee recommended that the proposal be further developed by the NCWM Fuels and Lubricants Subcommittee (FALS) due to their expertise in this area.

At the 2010 WWMA Annual Meeting held in Olympia, Washington, a state official, who is also a member of the USNWG, recommended that this item be split into two separate proposals. One proposal would address: "Specifications for Hydrogen Fuel for Internal Combustion Engines and Fuel Cells." The second item would address: "Definitions" with the existing language and definitions as recommended by the USNWG FSS. The state official commented that work has been done by the USNWG on definitions, and that moving the terms to a vote would help move the implementation and acceptance of hydrogen. It was stated that "specifications" could take years to develop. The WWMA L&R Committee agreed with the recommendation in having the definitions as a separate item (refer to Item 237-2). The WWMA L&R Committee recommends that this item remain Informational.

At the 2010 SWMA Annual Meeting, the NIST Technical Advisor informed the group that the WWMA recommended to separate the fuel specifications from the definitions. The SWMA L&R Committee also agreed to separate these two items. The SWMA L&R Committee recommends moving the fuel quality proposal forward as an Informational item.

At the 2010 N EWMA Interim Meeting, there were no comments heard on this item. T he NEWMA L&R Committee recommends moving forward the fuel specification portion as an Informational item. The NEWMA's L&R recommendation for the definitions is documented in Item 237-2.

Table 1.
Hydrogen Fuel Quality Specifications*

	Property	Value	Unit	Limit	Test Method(s)	Responsible Standards Committee and Status of test method
1	Ammonia	0.1	ppm v/v	Maximum	ASTM D7653-10	
2	Carbon Dioxide	2.0	ppm v/v	Maximum	ASTM D7653-10 ASTM D7649-10	
3	Carbon Monoxide	0.2	ppm v/v	Maximum	ASTM D7653-10	
4	Formaldehyde	0.01	ppm v/v	Maximum	ASTM D7653-10	
5	Formic Acid	0.2	ppm v/v	Maximum	ASTM D7550-09 ASTM D7653-10	
6	Helium	300.0	ppm v/v		to be specified	ASTM D03.14
7	Hydrogen Fuel Index	99.97	% (a)		to be specified	
8	Nitrogen and Argon	100.0	ppm v/v		ASTM D7649-10	
9	Oxygen	5.0	ppm v/v	Maximum	ASTM D7649-10	
10	Particulate Concentration	1.0	mg/kg	Maximum	ASTM D7650-10 ASTM D7651-10	
11	Total Allowable Non-Hydrogen, Non-Helium, Non-Particulate constituents	100.0	ppm v/v	Maximum	to be specified	
12	Total Non-Hydrogen Gases	300.0	ppm v/v (b)	Maximum	to be specified	
13	Total Halogenated Compounds	0.05	ppm v/v	Maximum	to be specified	WK 23815 under ASTM D03.14
14	Total Hydrocarbons	2.0	ppm v/v (c)	Maximum	to be specified	WK 22378 under ASTM D03.14
15	Total Sulfur Compounds	0.004	ppm v/v	Maximum	to be specified	WK 24073 under ASTM D03.14
16	Water	5.0	ppm v/v	Maximum	ASTM D7653-10 ASTM D7649-10	

Footnotes to Table 1:

a. Hydrogen fuel index is the value obtained with the value of total gases (%) subtracted from 100 %.
b. Total Gases = Sum of all impurities listed on the table except particulates.
c. Total Hydrocarbons may exceed 2 ppm v/v only due to the presence of methane, provided that the total gases do not exceed 300 ppm v/v.

*The FTC's Fuel Rating Rule (16 CFR Part 309) see the requirements in "Labeling of Alternative Fuels" at http://www.ftc.gov/bcp/edu/pubs/business/autos/bus29.shtm; requires dispensers to bear an declaration of minimum percent of hydrogen determined, according to test methods described in "Standard Test Method for Analysis of Natural Gas by Gas Chromatography (ASTM D1946).

Updated 1/20/2011

At the 2011 NCWM Interim Meeting held in Dallas, Texas, the NIST Technical Advisor submitted an updated Table 1. Hydrogen Fuel Quality Specification that was received from the USNWG. The USNWG also submitted the following updated specifications for the allowable level of the constituents listed in Table 1. Hydrogen Fuel Quality Specifications and corresponding standardized procedures for collecting and measuring each constituent are now available for: Ammonia [1], Carbon Dioxide [2], Carbon Monoxide [3], Formaldehyde [4], Formic Acid [5],

Nitrogen and Argon [8], Oxygen [9], Particulate Concentration [10], and Water [16]. The next stage in the development of these standards is to round robin the methods to establish precision and bias.

Standard Test Methods for Sulfur [15] and Hydrocarbons [14] will be made available shortly since these standards are in publishing. ASTM Subcommittee D03.14 on Hydrogen and Fuel Cells has tentative plans for sending the standards for Helium [6] and Halogenates [13] to ballot in March 2011.

The Committee recommends that the item remain Informational.

At the 2011 NEWMA and CWMA Annual Meetings, an updated specifications chart was reviewed. Both Regions are recommending this item move forward as an Informational item until further developed by the USNHWG.

At the 2011 NCWM Annual Meeting held in Missoula, Montana, a revised chart updated on July 12, 2011, was distributed (refer to item under consideration). It was noted by a representative of the USNHWG that the previous color coded chart was eliminated since only one constituent remains to be completed. T he Committee is in agreement that the revised chart move forward as an Information item.

Additional information on this hydrogen proposal and the corresponding method of sale regulation and hydrogen gas measuring devices code adopted in 2010 can be found at website: http://www.nist.gov/pml/wmd/lmdg/hydrogen.cfm. For additional information on this item, contact Mr. Marc Buttler at marc.buttler@nist.gov or (301) 975-4615.

237-2 I HB 130, Definitions for Hydrogen Fuel for Internal Combustion Engines and Fuel Cell Vehicles

(This item was removed from Voting status.
The Committee determined that additional work needs to be done and returned it to Informational status.)

Source: Western Weights and Measures Association (WWMA). This item was previously within Item 237-1.

Purpose: Adopt definitions for hydrogen fuel, internal combustion engine, and fuel cell.

Item Under Consideration: In April 2009, the U.S. National Work Group (USNWG) for the Development of Commercial Hydrogen Measurement Standards Fuel Specifications Subcommittee (FSS) presented the following recommended definitions for consideration.

FSS supports the proposed new definitions to address gaseous hydrogen refueling applications.

1. Specification for Hydrogen Fuel for Internal Combustion Engines and Fuel Cells

2. Definitions

1.XX. Fuel Cell. – An electrochemical energy conversion device in which fuel and an oxidant react to generate energy without consumption of its electrodes or electrolytes.
(Added 201X)

1.XX. Hydrogen Fuel. – A fuel composed of the chemical hydrogen intended for consumption in a surface vehicle with an internal combustion engine or fuel cell.
(Added 201X)

1.XX. Internal Combustion Engine. – A device used to generate power by converting chemical energy bound in the fuel into mechanical work to power a vehicle.
(Added 201X)

Background/Discussion: This proposal was reviewed at all the fall regional meetings under Item 237-1. At the 2010 WWMA and SWMA Annual Meetings and the 2010 NEWMA Interim Meeting, the Associations made the

recommendation to have the definitions for hydrogen fuel for internal combustion engines and fuel cell vehicles considered as a separate item. All of the Associations are recommending this item move forward as a Voting item. (refer to Item 237-1 above for additional background information)

At the 2011 NCWM Interim Meeting held in Dallas, Texas, a NIST Technical Advisor reported that the USNWG for hydrogen supports this item and recommends it be adopted by the NCWM. The Committee recommends this item for adoption by the NCWM.

At the 2011 NEWMA and CWMA Annual Meetings, no comments were heard on this item. The NEWMA and CWMA L&R Committees recommended that this item move forward as a Voting item.

At the 2011 NCWM Annual Meeting held in Missoula, Montana, a state official spoke in support of this item. There were no additional comments heard. During the voting session, it was asked if online comments were reviewed for additional language changes. The Committee Chair responded that online comments were reviewed by the Committee.

Jim Simnick submitted the following changes via the NCWM online commenting system:

1.XX. Fuel Cell. – An electrochemical energy conversion device in which fuel and an oxidant react to generate **electrical** energy without consumption of its electrodes or electrolytes.

1.XX. Hydrogen Fuel. – A fuel composed of the **molecular** ~~**chemical**~~ hydrogen intended for consumption in a surface vehicle **or electricity production device** with an internal combustion engine or fuel cell.

1.XX. Internal Combustion Engine. – A device used to generate power by converting chemical energy bound in the fuel **via spark-ignition or compression ignition combustion** into mechanical work to power a vehicle **or other device**.

Prior to the voting session it was recommended that the definition be amended to the language submitted by Mr. Simnick. A representative of the USNHWG remarked that the substitution of the word molecular for chemical is questionable; accordingly they would like to take the language back to the USNHWG for additional review and study. A state official requested that the Committee remove this item from Voting status and return to Informational status. The Committee was in agreement that an additional review is required by the USNHWG and removed the item from Voting status.

237-3 I Engine Fuels and Automotive Lubricants Regulation, Section 3.15. Biodiesel and Biodiesel Blends

Source: Southern Weights and Measures Association (SWMA)

Purpose: Amend Section 3.15. Biodiesel and Biodiesel Blends of the Engine Fuels and Automotive Lubricants Regulation to remove the exemption for declaration of biodiesel content on product transfer documents for biodiesel blends up to 5 %.

Item Under Consideration: Amend Section 3.15. Biodiesel and Biodiesel Blends of the Engine Fuels and Automotive Lubricants Regulation.

3.15. Biodiesel and Biodiesel Blends.

3.15.1. Identification of Product. – Biodiesel shall be identified by the term "biodiesel" with the designation "B100." Biodiesel blends shall be identified by the term "Biodiesel Blend."

3.15.2. Labeling of Retail Dispensers.

3.15.2.1. Labeling of Grade Required. – Biodiesel shall be identified by the grades S15 or S500. Biodiesel blends shall be identified by the grades No. 1-D, No. 2-D, or No. 4-D.

3.15.2.2. EPA Labeling Requirements Also Apply. – Retailers and wholesale purchaser-consumers of biodiesel blends shall comply with EPA pump labeling requirements for sulfur under 40 CFR § 80.570.

3.15.2.3. Automotive Fuel Rating. – Biodiesel and biodiesel blends shall be labeled with its automotive fuel rating in accordance with 16 CFR Part 306.

3.15.2.4. Biodiesel Blends. – When biodiesel blends greater than 20 % by volume are offered by sale, each side of the dispenser where fuel can be delivered shall have a label conspicuously placed that states, "Consult Vehicle Manufacturer Fuel Recommendations."

The lettering of this legend shall not be less that 6 mm (¼ in) in height by 0.8 mm ($^{1}/_{32}$ in) stroke; block style letters and the color shall be in definite contrast to the background color to which it is applied.

3.15.3. Documentation ~~for Dispenser Labeling Purposes~~ Required on Transfer Documents. – ~~**The retailer shall be provided, a**~~**A**t the time of delivery of the fuel, a declaration of the volume percent biodiesel **shall be disclosed on all transfer documents.** ~~**on an invoice, bill of lading, shipping paper, or other document. This documentation is for dispenser labeling purposes only; i**~~It is the responsibility of any potential blender to determine the amount of biodiesel in the diesel fuel prior to blending.

(Amended 201X)

3.15.4. Exemption.

(a) Biodiesel blends that contain less than or equal to 5 % biodiesel by volume are exempted from the requirements of Sections 3.15.1. Identification of Product~~,~~ **and** 3.15.2. Labeling of Retail Dispensers~~, and 3.15.3. Automotive Fuel Rating~~ when it is sold as "diesel fuel" as required in Section 3.3. **Diesel Fuel.**

(b) Diesel fuel containing less than 1 % by volume biodiesel is exempted from the requirement of 3.15.3. Documentation for Dispenser Labeling Purposes.

(c) Diesel fuel containing 1 % and not more than 5 % by volume biodiesel fuel is exempt from disclosing the actual percent by volume of biodiesel as required in Section 3.15.3. Documentation for Dispenser Labeling Purposes. However, the term "Contains Biodiesel" or other similar terms shall be used.

(Amended 201X)

(Added 2005) (Amended 2008 **and 201X**)

Background/Discussion: At the 2009 SWMA Annual Meeting held in Clearwater, Florida, a discussion over blending was presented by a FALS member. Biodiesel is being blended at many terminals across the country in concentrations up to 5 %. Marketers downstream of the terminal are then attempting to blend additional biodiesel to target levels, and finding that their product is being over-blended because they were not aware that the fuel contained any biodiesel. Per Mr. Jennings, Tennessee, at least one major truck stop operator has already voiced concerns to the FALS Chairman. This amended proposal will remove the exemption declaration of biodiesel content on product transfer documents for biodiesel blends up to 5 %. Biodiesel is blended at terminals in concentrations up to 5 %. Mr. Jennings felt it was important to start this recommendation and have the FALS Chairman vet the proposal out to all members of the FALS Committee for their comments before the NCWM Interim meeting in January 2010.

3.15. Biodiesel and Biodiesel Blends

3.15.1. Identification of Product. – Biodiesel shall be identified by the term "biodiesel" with the designation "B100." Biodiesel blends shall be identified by the term "Biodiesel Blend."

3.15.2. Labeling of Retail Dispensers.

3.15.2.1. Labeling of Grade Required. – Biodiesel shall be identified by the grades S15 or S500. Biodiesel blends shall be identified by the grades No. 1-D, No. 2-D, or No. 4-D.

3.15.2.2. EPA Labeling Requirements Also Apply. – Retailers and wholesale purchaser-consumers of biodiesel blends shall comply with EPA pump labeling requirements for sulfur under 40 CFR § 80.570.

3.15.2.3. Automotive Fuel Rating. – Biodiesel and biodiesel blends shall be labeled with its automotive fuel rating in accordance with 16 CFR Part 306.

3.15.2.4. Biodiesel Blends. – When biodiesel blends greater than 20 % by volume are offered by sale, each side of the dispenser where fuel can be delivered shall have a label conspicuously placed that states "Consult Vehicle Manufacturer Fuel Recommendations."

The lettering of this legend shall not be less that 6 mm (¼ in) in height by 0.8 mm ($^{1}/_{32}$ in) stroke; block style letters and the color shall be in definite contrast to the background color to which it is applied.

3.15.3. Documentation for Dispenser Labeling Purposes. – The retailer shall be provided, at the time of delivery of the fuel, a declaration of the volume percent biodiesel on an invoice, bill of lading, shipping paper, or other document. ~~**This documentation is for dispenser labeling purposes only; it is the responsibility of any potential blender to determine the amount of biodiesel in the diesel fuel prior to blending.**~~

3.15.4. Exemption. – Biodiesel blends that contain less than or equal to 5 % biodiesel by volume are exempted from the requirements of Sections 3.15.1. Identification of Product~~,~~ **and** 3.15.2. Labeling of Retail Dispensers~~, and 3.15.3. Automotive Fuel Rating~~ when it is sold as "diesel fuel" as required in Section 3.3. Diesel Fuel.

(Added 2005) (Amended 2008 **and 20XX**)

The SWMA Committee recommends moving this item forward to the NCWM L&R Committee Agenda as a Voting item.

At the 2010 NCWM Interim Meeting, Mr. Hayes, FALS Chairman, gave an update on the Subcommittee's work to remove the current exemption for biodiesel disclosure in diesel fuel at 5 % and below, on product transfer documents.

A draft of substitute language was circulated among FALS members prior to the interim meeting. This substitute expanded the disclosure of biodiesel content on all transfer documents (not limited to ones to the retailer) and for levels greater than 1 % biodiesel. The substitute was an attempt to find middle ground. FALS members were more agreeable to this substitute, but many still felt more work is needed.

The L&R and FALS Committee received seven letters (refer to L&R Appendix E within the "Report of the 95th NCWM" Annual Meeting [SP 1115, 2010]) that do not support this proposal as stated. The Committee does support working on this issue and receiving feedback from industry. There is concern with the documentation and co-mingling of fuels. If fuel is co-mingled, it would need to be sampled every time, which could be quite costly.

An official would like to see this item move forward as a Voting item. This official would like the spring Regional meetings (NEWMA and CWMA) to review and further develop the language. American Petroleum Institute (API) stated there are many things to consider, such as preemption language, cost implications, commercial issue of declaring with each transaction. API has worked with marketers, but there continues to be a difference of opinion and no consensus. It was voiced by industry that all biodiesel needs to be documented on the paperwork. If not, it puts the wholesaler, retailer, and consumer at risk. There was a comment from a stakeholder that they do not agree with API's comment, and that this has been a two-year battle on who gets to do the blending. Blenders are over-

blending because they are not aware of what the current blend is. To prevent this situation, it would require disclosure on the transfer document.

At the 2010 NEWMA Annual Meeting in Groton, Connecticut, a comment was heard from a stakeholder that the FTC has not changed the existing posting rule. The NEWMA L&R Committee recommends that this item remain Informational.

At the 2010 CWMA Annual Meeting in Springfield, Illinois, there were several comments stating that the exact percentage of an alternative fuel needs to be known. Without the percentage being known, mislabeling can occur, which is not good for consumer, marketers, the environment, and renewable fuels. One question that needs to be addressed is: What is the downside of providing this information? A representative of the National Biodiesel Board (NBB) does not support this proposal and would like to have further discussions to seek what is best for the entire industry. They also commented that FTC declined to modify requirements for disclosure on product transfer documents for fuels containing 5 % or less biodiesel. A state official disagrees that the exact percentage is necessary since it is the blender's responsibility to test the product prior to blending. A representative of the Renewable Fuels Association would like to see the proposal expanded to include all additives, and stated that the focus needs to be in broader terms instead of renewable fuels and recommends that the scope include all blending components.

It was recommended by the CWMA L&R Committee that this item move forward as an Informational item and that FALS form a task force under their guidance, to help further develop this proposal.

At the 2010 NCWM Annual Meeting held in St. Paul, Minnesota, the Committee received numerous letters (refer to Appendix E within the "Report of the 95th NCWM" [SP 1115, 2010]), and heard from fifteen stakeholders and industry representatives, supporting Section 3.15.3 that requires disclosure. Several participants expressed concerns with sections of the proposal. Currently, the FTC has the authority to protect consumers and they are looking at requiring product transfer documents. Several stakeholders indicated that they expect FTC to issue a proposed rule on biodiesel in the near future. It would be best if we stayed in line with the FTC ruling on the biodiesel issue. The very low blends seem to be the challenge.

The sections that are of concern to stakeholders are 3.15.4 (b) and (c), since it conflicts with reporting of taxes collected on biodiesel. The exact amount of the blend needs to be documented on the transfer document. The concern is when fuel is picked up from various locations and delivered; the actual amount of biodiesel is not documented. Currently blending at the terminal is not an issue.

The Committee agreed to allow time for the FALS Committee to receive additional information and further discuss this item.

At the 2010 CWMA Interim Meeting, a representative from a Petroleum Marketers Association commented that disclosure sets the tone for a chain of events for biodiesel. It was important for disclosure to be provided all the way through the distribution process because of the potential for over-blending. He believes that it is not realistic for wholesale distributors to test for biodiesel due to the cost. He supports the proposal with exception of the exemptions provided in 3.15.4 Exemptions (b) and (c). A state regulator agreed with this testimony. Another state regulator commented that the current proposal follows the same format as the ethanol regulation. A petroleum dealer mentioned that due to the RFS2, disclosure is needed in order to meet the mandates for blending.

A representative with the NBB commented that this proposal needs to be further developed by the FALS. She believes that we have not heard from all segments of the industry regarding this proposal. She also expressed concern that there will be no benefit to consumers if the cost of the extra testing of fuel is being passed on to consumers. It was mentioned that there are quick testing methods available for determining biodiesel content in the field; although, some are more accurate than others. The NBB representative also stated that the FTC believes that it is the responsibility of the blender to determine biodiesel content prior to blending.

A producer mentioned that the disclosure proposal would require terminals to purchase equipment and to do additional testing. The producer is concerned about tank stratification and the need to change bills of lading as the content varies. Cost and manpower are major concerns for producers. A marketer provided testimony that it is

more efficient for terminals to purchase testing equipment as opposed to requiring all downstream blenders to purchase testing equipment. He stated that changing bills of lading is only a software change. He believes that it is the blenders' obligation to meet the law for labeling, and it is difficult if the biodiesel content is not disclosed. The NBB representative questioned how often marketers test. A marketer responded that they do not routinely test; since they rely on transfer documents to accurately state what they are getting. Another marketer stated that producers can control what goes into their tanks and questioned if producers know how much biodiesel is in each batch. A producer responded that for barrels received by water in Savannah, Georgia, the biodiesel content is only disclosed on Plantation pipeline shipments if it is more than 5 %. The CWMA L&R Committee recommends that the proposal be further developed by the FALS.

At the 2010 WWMA and SWMA Annual Meeting, an industry representative spoke in support of keeping this item Informational and allow the FALS to further develop the requirements in light of the comments received. An industry representative stated that all shipping documents should show the exact blend of biodiesel. The Association recommends that this item remain Informational.

At the 2010 NEWMA Interim Meeting, the NEWMA L&R Committee received written comments from API (refer to Appendix E). The NEWMA L&R Committee recommends that this item move forward as an Informational item.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, a member of both the FALS and L&R Committee reported that this item was debated during the FALS work sessions and a consensus could not be reached. It was agreed upon that a Biodiesel Disclosure Task Group be formed to further study this item. Steve Howell with MARC IV and Samuel Bell, Echols Oil Company will co-chair this Subcommittee. The L&R Committee received five letters (refer to L&R Appendix E.), but no comments were received from the floor during open hearings. Since the Committee received correspondence on the item, they were surprised that no one spoke to it at the open hearing. The Committee recommends that this item move forward as an Informational item.

At the 2011 NEWMA Annual Meeting held in Saratoga Springs, New York, a consultant with the National Biodiesel Board (NBB) stated that a report is currently being prepared and will be ready for the 2011 Annual NCWM meeting. The NEWMA L&R Committee recommended that this item move forward as an Informational item.

At the 2011 CWMA Annual Meeting held in Grand Rapids, Michigan, the FALS Chairperson remarked that a WG was formed under FALS to develop new language. A petroleum representative opposes the item as currently written as it does not allow the blender to disclose what level blending has occurred. Another petroleum representative remarked that there are other implications beyond small percentages of biodiesel with other additives. It was agreed that as blender you should know exactly what you are getting, but it needs to be tested. The question is, who is the responsible party for providing the test? The CWMA L&R Committee recommends that this item move forward as an Informational item.

At the 2011 NCWM National Meeting held in Missoula, Montana, the FALS Chairperson reported that a Subcommittee has been formed to work out a compromise on the requirements and a report with solutions should be prepared for the FALS at the 2012 Interim Meeting.

If you would like to participate in this Biodiesel Disclosure Task Group Subcommittee, contact Mr. Steve Howell, MARC IV (816-903-6272), e-mail: showell@marciv.com or Mr. Samuel Bell, Echols Oil Company, at (864) 233-6205, e-mail: info@scpma.com.

237-4 I HB 130, Engine Fuels and Automotive Lubricants Regulation, Section 2.1.2. Gasoline-Oxygenated Blends

Source: Central Weights and Measures Association

Purpose: Modify the language in Section 2.1.2. Gasoline-Oxygenate Blends and 2.1.3. Gasoline-Ethanol Blends to be aligned with the Environmental Protection Agency's (EPA's) language in the March 2009 Growth Energy Waiver request.

Item Under Consideration: FALS will need to provide recommended language. S ection 2. Standard Fuel Specifications is provided below because the most recent language was not in HB 130 (2009), but was released as an amendment in August 2009 (in place of republishing HB 130 [2010]). This language, minus the proposed modifications, has been included in the HB 130 (2011).

2.1. Gasoline and Gasoline-Oxygenate Blends

2.1.1. Gasoline and Gasoline-Oxygenate Blends (as defined in this regulation). – Shall meet the most recent version of ASTM D4814 "Standard Specification for Automotive Spark-Ignition Fuel"~~**except for the permissible offsets for ethanol blends as provided in Section 2.1.3. Gasoline-Ethanol Blends.**~~

~~**2.1.2. Gasoline-Oxygenate Blends. – Shall contain no more than 10 volume percent ethanol. For other oxygenates, blends shall contain no more than 2.0 mass percent oxygen except fuels containing aliphatic ethers and/or alcohols (excluding methanol) shall contain no more than 2.7 mass percent oxygen.**~~

~~**(Added 2009)**~~

~~**2.1.3. Gasoline-Ethanol Blends. – When gasoline is blended with 1 to 10 volume percent ethanol, the ethanol shall meet the requirements of ASTM D4806 and the blend shall meet ASTM D4814 with the following permissible exceptions:**~~

~~**(a) The maximum vapor pressure shall not exceed the ASTM D4814 limits by more than 1.0 psi for:**~~

~~**(1) Only 9 to 10 volume percent ethanol blends from June 1 through September 15.**~~

~~**(2) All blends of 1 to 10 volume percent ethanol from September 16 through May 31.**~~

~~**(b) Until May 1, 2012, or until ASTM D4814 incorporates changes to the 50 volume percent evaporated point to account for the volatility effects of up to 10 volume percent ethanol, whichever occurs earlier, the distillation minimum temperature at the 50 volume percent evaporated point shall not be less than 66 °C (150 °F) (see Notes 1and 2).**~~

~~**(c) Until May 1, 2012, or until ASTM D4814 incorporates changes to the vapor lock protection minimum temperature for Classes 1 – 5 to account for the volatility effects of up to 10 volume percent ethanol, whichever occurs earlier, the minimum temperature for a Vapor Liquid Ratio of 20 for the applicable vapor lock protection class for gasoline-ethanol blends shall be as follows (see Notes 1 and 2):**~~

~~**(1) Class 1 shall be 54 °C (129 °F)**~~

~~**(2) Class 2 shall be 50. °C (122 °F)**~~

~~**(3) Class 3 shall be 47 °C (116 °F)**~~

~~**(4) Class 4 shall be 41.5 °C (107 °F)**~~

~~**(5) Class 5 shall be 39 °C (102 °F)**~~

~~**(6) Class 6 shall be 35 °C (95 °F)**~~

~~**All gasoline and gasoline-ethanol blends sold in Area V (as shown in ASTM D4814 Appendix Fig. X1.2) shall meet the vapor lock protection minimum temperatures in ASTM D4814.**~~

~~**NOTE 1: The value for the 50 volume percent evaporated point noted in Section 2.1.3.(b) and the values for Classes 1, 2, and 3 for the minimum temperature for a Vapor-Liquid Ratio of 20 in Section 2.1.3.(c) are now aligned and identical to those that are being published in ASTM D4814-09b and apply equally to**~~

~~**gasoline and gasoline-ethanol blends. In future editions of NIST Handbook 130, Section 2.1.3.(b) will be removed editorially and the reference to Classes 1, 2, and 3 in Section 2.1.3.(c) will be removed editorially. In addition, existing Sections 2.1.3. through 2.1.7. of NIST Handbook 130 will be renumbered.**~~

~~**NOTE 2: The temperature values (e.g., 54 °C, 50. °C, 41.5 °C) are presented in the format prescribed in ASTM E29 "Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications."**~~

~~**(Added 2009)**~~

Discussion/Background: The EPA will make a ruling on the March 2009 Growth Energy Waiver. When the ruling is announced, the above regulation will need to be extended to cover E15 gasoline blends. The Renewable Fuels Association (RFA) is proposing a broader approach to recognizing the authorized proportion of ethanol. RFA recommends the following language:

2.1.2. Gasoline-Oxygenate Blends. – Shall contain no more than **the maximum proportion of ethanol authorized by U.S. Environmental Protection Agency (EPA) under Section 211 of the Clean Air Act.** ~~**10 volume percent ethanol. For other oxygenates, blends shall contain no more than 2.0 mass percent oxygen except fuels containing aliphatic ethers and/or alcohols (excluding methanol) shall contain no more than 2.7 mass percent oxygen.**~~

At the 2010 CWMA Interim Meeting, an update was given on the current consideration by EPA to allow higher ethanol blends in conventional vehicles. The FALS Chairperson stated that the FALS Subcommittee may be meeting to discuss this issue at the NCWM Interim Meeting in January 2011. The CWMA L&R Committee received two letters on this issue (refer to Appendix F). The CWMA L&R Committee recommends that this item be forwarded to the FALS for further work.

At the 2010 WWMA Meeting, an industry representative expressed concern on what this action will have on car warranties and potential liability issues. A representative stated that he opposed this item until an official ruling is made by the EPA. The WWMA L&R Committee recommends that this item be made developmental.

At the 2010 SWMA Annual Meeting and the 2010 NEWMA Interim Meeting, there were no comments heard on this item. The Conference would like to see a recommendation from the FALS. Both Associations are recommending that these items go to the FALS for further development.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, Mr. Ron Hayes, Chairman of FALS, reported that FALS held a conference call on January 14, 2011, and also met at the NCWM to review the FALS items. The FALS Chairman reported that consensus could not be reached on this item.

An industry representative expressed concern with legal and liability challenges if the current proposal is passed. A representative from the renewable fuels industry recommended moving the item forward for adoption as written, because it recognizes EPA as the authority on setting requirements for ethanol and will not restrict ethanol use. An energy representative also noted the proposal collaboratively has gone through all the regions with no opposition and moving this forward as a vote is to recognize what EPA has decided, and their authority not to restrict ethanol content. A representative from API commented that passing the proposal is premature and the NCWM should delay action until revisions to ASTM D4814 can be completed. He also noted that the EPA decision was based on the durability of emissions related equipment and vehicle emissions, and does not preempt rules that are based on grounds other than emissions; ASTM will need to determine the vehicle drivability characteristics of the fuel before amending the D4814 performance standard. It was suggested that the goal of the model engine fuel regulation is to ensure vehicle performance, so adopting the ASTM standard is appropriate. An automotive representative expressed support for waiting on the revisions for ASTM D4814. The Committee agreed to make this item Informational to allow FALS to study it further.

Section 2. Standard Fuel Specifications

2.1.2. Gasoline-Oxygenate Blends. – Shall contain no more than **the maximum proportion of** ~~**10 volume percent**~~ ethanol **authorized by the U.S. Environmental Protection Agency (EPA) under Section 11 of the Clean Air Act**. ~~**For other oxygenates, blends shall contain no more than 2.0 mass percent oxygen except fuels containing aliphatic ethers and/or alcohols (excluding methanol) shall contain no more than 2.7 mass percent oxygen.**~~

(Added 2009)

At the 2011 NEWMA Annual Meeting held in Saratoga Springs, New York, a consultant remarked that proposed labeling is currently with the Office of Management and Budget (OMB), and they are working with the Federal Trade Commission (FTC) to agree on a final requirement. The NEWMA L&R Committee recommended this item move forward as an Informational item.

At the 2011 CWMA Annual Meeting held in Grand Rapids, Michigan, a letter was received recommending that the CWMA not give consideration to the proposal until ASTM D4814, Standard Specification for Automotive Spark-Ignition Engine Fuel is completed. The CWMA L&R Committee recommended that this item move forward as an Informational item.

At the 2011 NCWM Annual Meeting held in Missoula, Montana, the FALS met to modify Section 2.1. (refer to item under consideration). FALS is waiting to see how E15 is incorporated into ASTM D4814, Standard Specification for Automotive Spark-Ignition Engine Fuel. ASTM is currently waiting for performance data from the Coordinating Research Council (CRC) study. A Tennessee state official recommends that the model regulation only refer to the ASTM D4814 specification for gasoline-oxygenate blends. There was additional discussion regarding the vapor pressure exceptions provided in the model law regulation. It was also mentioned that the Environmental Protection Agency (EPA) may eventually discontinue the 1.0 psi allowance for E10 blends. The Committee supports the item under consideration and would like to receive additional input from the Regional meetings.

237-5 I HB 130, Engine Fuels and Automotive Lubricants Regulation, Section 2.1.4. Minimum Motor Octane Number

Source: BP Global Fuels Technology – West Coast

Purpose: Remove Section 2.1.4. Minimum Motor Octane Number since it is considered obsolete.

Item Under Consideration:

~~**2.1.7. Minimum Motor Octane Number. The minimum motor octane number shall not be less than 82 for gasoline with an AKI of 87 or greater;**~~

Background/Discussion: In the early 90s, the Table titled "Automotive Spark-Ignition Engine Fuel Antiknock Indexes in Current Practice" was removed from the body of D4814 and placed into an Appendix in D4814. This Appendix is non-mandatory information and is not part of the specification. It is inappropriate for NIST HB 130 to continue with the 82 motor octane number minimum for the following reasons: 1) 82 motor octane number minimum is not an ASTM D4814 specification; 2) FTC regulates octane posting and has no motor octane number minimum; 3) neither the Kinder Morgan Pipeline nor the Olympic Pipeline requires a minimum motor octane number specification; and 4) the Colonial Pipeline has no motor octane number minimum for either Reformulated Blendstock for Oxygenate Blending (RBOB) or Conventional Blendstock for Oxygenate Blending (CBOB).

Recent data shows a low motor octane number is actually preferable for the current fleet of vehicles. Motor and Research octane numbers are equally important to the performance of the motor vehicle engine. A minimum motor octane number requirement offers no more protection to the consumer than the road octane number which is the average of the Motor and Research octane numbers.

At the 2010 WWMA Annual Meeting, the WWMA L&R Committee is recommending that this item be made Informational.

At the 2010 SWMA Annual Meeting and the 2010 CWMA and NEWMA Interim Meeting, the Associations are recommending that this item be made Informational and be forwarded to the FALS.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, Mr. Ron Hayes, FALS Chairman, reported that the Subcommittee recommended that this item be Informational to allow more time for data to be reviewed. There currently exists historical data, and also a Coordinating Research Council (CRC) study is currently be done that will clarify issues and provide data needed to assist with making decision. There were no comments heard from the floor during open hearings. The L&R Committee made this item Informational.

At the 2011 NEWMA Annual Meeting held in Saratoga Springs, New York, there were no comments heard on this item. The NEWMA L&R Committee recommended that this item move forward as an Informational item.

At the 2011 CWMA Annual Meeting held in Grand Rapids, Michigan, the FALS Chairperson indicated that they are waiting for results from the CRC study and recommends this remain Informational because it is not fully developed. The CWMA L&R Committee recommends that this item move forward as an Informational item.

At the 2011 NCWM Annual Meeting held in Missoula, Montana, the FALS met on Sunday, July 17 and a presentation was provided by Mr. Jim McGetrick regarding background information on minimum octane levels. FALS is waiting for the data from the CRC study (report no. 660). The CRC plans to collect additional data on octane. The FALS is recommending this be kept Informational until additional information is received and a recommendation to the Committee can be prepared.

237-6 V HB 130, Engine Fuels and Automotive Lubricants Regulation, Section 3.13.1. Labeling of Vehicle Motor Oil

(This item was returned to Committee on a split vote.)

Source: Central Weights and Measures Association

Purpose: Amend the Fuels and Automotive Lubricants Regulation to require detailed invoicing requirements. Some oil facilities may not deliver the advertised oil, so consumers may be receiving lower quality oil. It is being recommended that retailers that provide oil change services be required to provide consumers with a document that lists the oil's manufacturer, brand name, SAE viscosity, and service requirements as defined in API 1509, SAE J183, or ASTM D4485.

Item Under Consideration:

3.13. Oil.

3.13.1. Labeling of Vehicle Motor Oil.

3.13.1.1. Viscosity. – The label on ~~**each container of**~~ **a** vehicle motor oil **container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank** shall contain the viscosity grade classification preceded by the letters "SAE" in accordance with the SAE International's latest version of SAE J300 **Engine Oil Viscosity Classification**.

3.13.1.2. Intended Use. – The label on ~~**each container of**~~ **a** vehicle motor oil **container** shall contain a statement of its intended use in accordance with the latest version of SAE ~~**J300**~~ **J183 Engine Oil Performance and Engine Service Classification (Other than "Energy Conserving").**

3.13.1.3. Brand – The label on a vehicle motor oil container and the invoice or receipt from service on an engine that includes the installation of vehicle motor oil dispensed from a

receptacle, dispenser, or storage tank shall contain the name, brand, trademark, or trade name of the vehicle motor oil.

~~**3.13.1.3.1. Exception for Quantities of One Gallon (3.785 L) or Less. – A container of engine vehicle motor oil with a volume of 1 gal (3.785 L) or less that does not meet an active service category, as defined by the latest version of SAE J183, shall bear a plainly visible cautionary statement in compliance with SAE J183, Appendix A, for obsolete API oil categories.**~~

3.13.1.3~~4~~. Engine Service Category. – The label on ~~**each container of**~~ **a** vehicle motor oil **container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank** shall contain the engine service category, or categories, met in letters not less than 3.18 mm ($^1/_8$ in) in height, as defined by the latest version of SAE J183, **Engine Oil Performance and Engine Service Classification (Other than "Energy Conserving")** or API Publication 1509, "Engine Oil Licensing and Certification System."

3.13.1.4.1. Inactive or Obsolete Service Categories. – The label on a vehicle motor oil container, receptacle, dispenser, or storage tank and the invoice or receipt from service on an engine that includes the installation of vehicle motor engine oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with SAE J183, Engine Oil Performance and Engine Service Classification (Other than "Energy Conserving") Appendix A, whenever the vehicle motor oil in the container or in bulk does not meet an active API service category as defined by the latest version of SAE J183, Engine Oil Performance and Engine Service Classification (Other than "Energy Conserving".

3.13.1.4.2. Tank Trucks or Rail Cars. – Tank trucks, rail cars, or other types of delivery trucks that are used to deliver vehicle motor oil are not required to display the SAE viscosity grade and service category or categories as long as the bill of lading other documentation provides that information.

All references to invoice or receipt will be enforceable effective on July 1, 2012.

Background/Discussion: At the 2010 CWMA Interim Meeting, a state regulator stated that oil changing facilities are affecting revenues from legitimate businesses by masquerading as branded facilities, while selling lower-quality oil (refer to Appendix G). The consumer believes they are receiving the advertised brand of oil. At least one branded oil company has investigated certain questionable installers, filed lawsuits, and have successfully closed those suits with installers in the area of trademark infringement and deceptive trade practices. To assist in mitigating these unlawful trade practices and to protect consumers against fraudulent activity, it is recommended that invoice be established. A state regulator questioned if businesses were using the same hose for hydraulic and motor oil, or if the hose would be flushed prior to using it for a different product. He remarked that there would be a contamination factor. The CWMA L&R Committee recommends that the item under consideration move forward to the NCWM L&R Committee for consideration.

Original Proposal:

3.13. Oil.

3.13.1. Labeling of Vehicle Motor Oil.

3.13.1.1. Viscosity. – The label on each container of vehicle motor oil shall contain the viscosity grade classification preceded by the letters "SAE" in accordance with the SAE International's latest version of SAE J300.

3.13.1.2. Intended Use. – The label on each container of vehicle motor oil shall contain a statement of its intended use in accordance with the latest version of SAE J~~300~~**183**.

3.13.1.3. Engine Service Category. – The label on ~~**each**~~ **a** ~~**container of**~~ vehicle motor oil **container, receptacle, pump, dispenser, or storage tank and the invoice from the sale of vehicle motor oil dispensed from a receptacle, pump, dispenser, or storage tank** shall contain the engine service category, or categories, met in letters not less than 3.18 mm ($^{1}/_{8}$ in) in height, as defined by the latest version of SAE J183 or API Publication 1509, "Engine Oil Licensing and Certification System."

3.13.1.3.1. ~~Exception for Quantities of One Gallon (3.785 L) or Less~~ Inactive or Obsolete Service Categories. ~~**– A container of engine vehicle motor oil with a volume of 1 gal (3.785 L) or less that does not meet an active service category, as defined by the latest version of SAE J183, shall bear a plainly**~~ **The label on a vehicle motor oil container, receptacle, pump, dispenser, or storage tank and the invoice from the sale of vehicle motor oil dispensed from a receptacle, pump, dispenser, or storage tank shall bear a plainly** visible cautionary statement in compliance with SAE J183, Appendix A, ~~**for obsolete API oil categories**~~ **whenever the vehicle motor oil in the container or in bulk does not meet an active API service category as defined by the latest version of SAI J183.**

3.13.1.3.2. Tank Trucks or Rail Cars. – Tank trucks or rail cars that are used to deliver vehicle motor oil are not required to display the SAE viscosity grade and service category or categories as long as the bill of lading or other documentation provides that information.

At the 2010 WWMA Annual Meeting, an industry representative, who submitted this proposal, recommended that the term "pump" be dropped from the language. A state official questioned if checking the labeling on bulk tanks is the responsibility of weights and measures, or is it an industry issue? The Technical Advisor suggested giving consideration to mirroring this same language in the method of sale. The WWMA L&R Committee recognizes that statement of brand is required on liquid measuring devices in HB 44. The WWMA L&R Committee recommends this item be moved forward as Informational item and have it be reviewed by the FALS**.**

3.13. Oil.

3.13.1. Labeling of Vehicle Motor Oil.

3.13.1.1. Viscosity. – The label on ~~**each container of**~~ **a** vehicle motor oil **container, receptacle, dispenser, or storage tank and the invoice from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank** shall contain the viscosity grade classification preceded by the letters "SAE" in accordance with the SAE International's latest version of SAE J300.

3.13.1.2. Intended Use. – The label on ~~**each container of**~~ **a** vehicle motor oil **container** shall contain a statement of its intended use in accordance with the latest version of SAE ~~**J300**~~ **J183**.

3.13.1.3. Brand – The label on a vehicle motor oil container and the invoice from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank shall contain the name, brand, trademark, or trade name of the vehicle motor oil.

~~**3.13.1.3.1. Exception for Quantities of One Gallon (3.785 L) or Less. – A container of engine vehicle motor oil with a volume of 1 gal (3.785 L) or less that does not meet an active service category, as defined by the latest version of SAE J183, shall bear a plainly visible cautionary statement in compliance with SAE J183, Appendix A, for obsolete API oil categories.**~~

3.13.1.~~3~~4. Engine Service Category. – The label on ~~**each container of**~~ **a** vehicle motor oil **container, receptacle, dispenser, or storage tank and the invoice from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage**

tank shall contain the engine service category, or categories, met in letters not less than 3.18 mm ($^{1}/_{8}$ in) in height, as defined by the latest version of SAE J183 or API Publication 1509, "Engine Oil Licensing and Certification System."

3.13.1.4.1. Inactive or Obsolete Service Categories. – The label on a vehicle motor oil container, receptacle, dispenser, or storage tank and the invoice from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with SAE J183, Appendix A, whenever the vehicle motor oil in the container or in bulk does not meet an active API service category as defined by the latest version of SAE J183.

3.13.1.4.2. Tank Trucks or Rail Cars. – Tank trucks, rail cars, or other types of delivery trucks that are used to deliver vehicle motor oil are not required to display the SAE viscosity grade and service category or categories as long as the bill of lading or other documentation provides that information.

At the 2010 SWMA Annual Meeting, Mr. Ferrick, from API, notified attendees that they were seeing a revised proposal. This revision was not presented at the 2010 CWMA and WWMA meetings. Mr. Ferrick supports this item stating that HB 130 has required that labels on motor oil packages identify the oil's SAE viscosity and API performance level. Both of these items are important pieces of information for consumers. The changes proposed for HB 130 are intended to apply the labeling requirements for packaged motor oils to oils sold in bulk. The changes as proposed would require motor oil manufacturers and distributors to identify the oils they deliver, and for installers to identify the oils they dispense. Requiring distributors to identify the motor oils they deliver to installers will help ensure that installers know what they are dispensing, and requiring installers to do the same on their invoices will provide the same level of information for consumers. The SWMA L&R Committee reviewed the revised language submitted, and agreed that the item has merit. It was also noted that the language needs to be similar for the regulations as well as the method of sale in HB 130. The SWMA L&R Committee would like to move this item forward as an Informational item.

At the 2010 NEWMA Interim Meeting, a representative of API spoke in favor of the need to disclose on all motor oil storage vessels and in receipts for oil change services the motor oil information. Currently, consumers may not be sure of what motor oil product they are receiving and may be subjected to fraud. A disclosure requirement would clearly disclose to consumers what they are purchasing and help eliminate any fraud. The NEWMA L&R Committee believes this is a consumer friendly issue, and that requiring retailer invoices for oil change services to disclose the manufacturer, brand name, SAE viscosity, and service requirements is appropriate. Proposed labeling requirements should be included on the agenda as a Developing item.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, Mr. Ron Hayes, Chairman of FALS, reported that FALS recommends moving the Western (WWMA) language forward. An API representative and submitter of the item also recommend that this revised version presented at the WWMA move forward. The Committee is recommending NCWM adoption of this item.

3.13.1. Labeling of Vehicle Motor Oil.

3.13.1.1. Viscosity. – The label on ~~**each container of**~~ **a** vehicle motor oil **container, receptacle, dispenser, or storage tank and the invoice from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank** shall contain the viscosity grade classification preceded by the letters "SAE" in accordance with the SAE International's latest version of SAE J300.

3.13.1.2. Intended Use. – The label on ~~**each container of**~~ **a** vehicle motor oil **container** shall contain a statement of its intended use in accordance with the latest version of SAE ~~**J300**~~ **J183**.

3.13.1.3. Brand – The label on a vehicle motor oil container and the invoice from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank shall contain the name, brand, trademark, or trade name of the vehicle motor oil.

~~**3.13.1.3.1. Exception for Quantities of One Gallon (3.785 L) or Less. A container of engine vehicle motor oil with a volume of 1 gal (3.785 L) or less that does not meet an active service category, as defined by the latest version of SAE J183, shall bear a plainly visible cautionary statement in compliance with SAE J183, Appendix A, for obsolete API oil categories.**~~

3.13.1.~~3~~4. Engine Service Category. – The label on ~~**each container of**~~ **a** vehicle motor oil **container, receptacle, dispenser, or storage tank and the invoice from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank** shall contain the engine service category, or categories, met in letters not less than 3.18 mm ($^{1}/_{8}$ in) in height, as defined by the latest version of SAE J183 or API Publication 1509, "Engine Oil Licensing and Certification System."

3.13.1.4.1. Inactive or Obsolete Service Categories. – The label on a vehicle motor oil container, receptacle, dispenser, or storage tank and the invoice from service on an engine that includes the installation of vehicle motor oil dispensed from a receptacle, dispenser, or storage tank shall bear a plainly visible cautionary statement in compliance with SAE J183, Appendix A, whenever the vehicle motor oil in the container or in bulk does not meet an active API service category as defined by the latest version of SAE J183.

3.13.1.4.2. Tank Trucks or Rail Cars. – Tank trucks, rail cars, or other types of delivery trucks that are used to deliver vehicle motor oil are not required to display the SAE viscosity grade and service category or categories as long as the bill of lading or other documentation provides that information.

At the 2011 NEWMA Annual Meeting held in Saratoga Springs, New York, it was noted that the title to the SAE and API standards technical title would editorially be added to the proposal. A request was made to change the word "motor" to "engine." A representative with API did not object to these changes. The NEWMA L&R Committee recommended that the item move forward as a Voting item.

At the 2011 CWMA Annual Meeting held in Grand Rapids, Michigan, the FALS Chairperson noted there is an identical proposal under Item 232-4 for the method of sale. It was remarked by an API representative that some oils have no business in the marketplace because they may cause engine damage. He further noted that it is vitally important for this language to be accepted. The CWMA L&R Committee recommended that this item move forward as a Voting item with the editorial corrections.

At the 2011 NCWM Annual Meeting held in Missoula, Montana, the FALS and L&R Committee received a letter from a stakeholder in support of this proposal (refer to Appendix I). There is a corresponding method of sale proposal under Item 232-4. It was agreed that the title to the ASTM standards would be editorially added into the proposal. A stakeholder requested that the Committee give consideration to implementing the requirement of this information being available on the receipt to a later date. This will allow retailers time to change over their system. During Committee review, it was agreed that the term "motor" would not be changed to "engine." Consideration was given to adding the following language with regard to receipts, "All references to invoice or receipt will be enforceable effective on July 1, 2012," and to add the word "or receipts" after the term invoice (refer to item under Consideration).

During the Voting session, a motion was made to remove Section 3.13.1.3. Brand. The motion to amend failed. The FALS Chairperson commented that brand is an important issue and by removing this section you will continue to facilitate fraud in the marketplace. Also, consumers may not have the required information to verify warranty work if the product identity were eliminated. Engine oils are made up of different blends and stocks unique to each manufacturer. Keeping the Section for Brand within the proposal was supported by several states and opposed by several others.

260 NIST HANDBOOK 133

260-1 I HB 133, Section 2.3.8. Moisture Allowance - Moisture Loss for Products Not Listed.

Source: Moisture Loss Work Group (MLWG).

Purpose: Provide additional guidance for making moisture allowances for products not listed in HB 133.

Item Under Consideration:

2.3.8. Moisture Allowances

e. How is moisture loss handled for products not listed in NIST Handbook 133?

Officials can test products for which no moisture loss guidance has been provided. If studies are a necessity they should be a collaborative effort between officials and industry. Because of the potential impact on interstate commerce, studies should be completed on a nationwide basis and not by individual jurisdictions unless circumstances justify only local consideration.

The amount of moisture loss from a package is a function of many factors, not the least of which is the product itself (e.g., moisture content, texture and density), packaging, storage conditions (e.g., temperature, humidity, and air flow), time, handling and others. If a packaged product is subject to moisture loss, officials must allow for "reasonable" variations caused by moisture either evaporating or draining from the product. Officials cannot set arbitrary moisture allowances based solely on their experience or intuition. Moisture allowances must be based on scientific data and must be "reasonable." Reasonable does not mean that all of the weight loss caused by moisture evaporation or draining from the product must be allowed. As a result of product and moisture variability, the approach used by an official must be developed on a case-by-case basis depending on many factors to include, but not be limited to, the manufacturing process, packaging materials, distribution, environmental influence and the anticipated shelf life of the product.

NIST Handbook 130 provides a starting point for developing a workable procedure in the Interpretation and Guideline Section 2.5.6. regarding "Resolution for Requests for Recognition of Moisture Loss in Other Packaged Products." Most studies involving nationally distributed products will require that products be tested during different seasons of the year and in different geographic locations to develop a nationally recognized moisture allowance. Some studies may require the development of laboratory tests used for inter-laboratory comparisons to establish moisture content in products at time of pack or at the time of inspection.

Moisture loss or gain is a critical consideration for any net content enforcement effort and one that, in most cases, cannot be addressed solely by a field official. If moisture loss issues are to be deliberated, it is the regulatory official's responsibility to resolve the packer's concern utilizing available resources and due process procedures. To fulfill this obligation the official may be required to utilize specialized test equipment and specific laboratory procedures. Additionally, the collection of adequate test data may require product examination over a broad geographical area and consideration of a wide range of environmental factors. If a national effort is required, a coordinated effort involving industry, trade associations, weights and measures officials, and federal agencies may be required. NIST will provide technical support upon request. If studies are a necessity they should be a collaborative effort between officials and industry but may be very time consuming depending on the product. Because of the potential impact on interstate commerce, studies must be completed on a nationwide basis and not by individual jurisdictions unless circumstances justify only local consideration.

Background/Discussion: In previous years, the MLWG reviewed draft changes that were developed to revise and update HB 133 (2005). Some of the proposed changes and recommendations were developed to improve the guidance on making moisture allowances. At the 2010 NCWM Annual Meeting held in St. Paul, Minnesota,

Item 260-1 (refer to the "Report of the 95th NCWM" [SP 1115, 2010]) was voted through the Conference with the exception of the item under of consideration.

At the 2010 CWMA Interim Meeting, a state regulator stated that HB 133 provides moisture allowance for only a few products. The regulator provided an example where a product was claiming moisture allowance for a product not contained in HB 133. This regulator was provided with only verbal assistance from NIST regarding what was needed to demonstrate the request for moisture allowance. The regulator believes written procedures need to be developed to provide guidance, and a step-by-step protocol developed for determining moisture allowance in a specific product. Another state regulator agreed and commented that determination of moisture allowance needs to be consistent. An industry representative agreed that more guidance is needed, and recommended that the proposal include the necessary information required to demonstrate moisture loss that warrants an allowance. The CWMA L&R Committee recommends that the MLWG continue to develop this proposal.

At the 2010 WWMA Annual Meeting, a county official expressed concern that the existing language is conflicting and does not provide specific guidance to weights and measures officials (i.e., statements that moisture loss should be determined on a case-by-case basis and at the same time calls for a nationwide study). It was recommended that the MLWG focus its effort on developing a clearer criteria and process for determining moisture loss. The WWMA L&R Committee agrees that the following language within the proposal is contradictory and vague and does not provide specific guidance to officials.

- should be a collaborative effort between officials and industry
- should be completed on a nationwide basis
- must be based on scientific data
- must be developed on a case-by-case basis
- may be required to utilize specialized test equipment and specific laboratory procedure
- a coordinated effort involving industry, trade associations, weights and measures officials may be required

The WWMA L&R Committee recommends that this be a Developmental item.

At the both the 2010 SWMA Annual Meeting and the 2010 NEWMA Interim Meeting, both Associations agreed that the item was not developed. It was recommended by both Associations that this moved forward as a Developing item.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, the NIST Technical Advisor gave an update that the HB 133 had amendments that were voted in at the July 2010 Conference. However, the item under consideration was pulled back for further development by the Moisture Loss WG. A state official commented that the MLWG needs to continue to develop this item. The NIST Technical Advisor will set up a WG meeting at the 2011 NCWM National Meeting.

The Committee supports the MLWG meeting in July and would like to receive additional input from the regions. The Committee made this an Informational item.

At the 2011 NEWMA Annual Meeting held in Saratoga Springs, New York, the NIST Technical Advisor requested information from the region on how they would like to proceed on this item. Currently, the item under consideration stipulates store, data, and test procedure. The NEWMA L&R Committee recommends that this item move forward as an Informational item.

At the 2011 CWMA Annual Meeting held in Grand Rapids, Michigan, a state representative remarked that current moisture loss issues with a company cannot be resolved due to lack of guidance for proper determination. They would like to see an emphasis on national studies and not case-by-case situations. There were recommendations to

form a workgroup or get an organization involved that can assist. This region would like to see an easy, implementable solution on how to demonstrate moisture loss. The Committee would like to see a moisture loss determination for products not currently listed in HB 133. For this reason, the Committee would like to see this as an Informational item.

At the 2011 NCWM Annual Meeting held in Missoula, Montana, a representative of Kraft foods supported this as an Informational item. Kraft will be providing NIST with additional draft language for consideration. It is important that the language be clear as to who is to provide data, what purpose does the data serve, and is it for a specific product on a national or state level. Kraft will develop a detailed proposal to look at a few more principles of establishing moisture allowance. They will also provide recommendations on guidance of four areas in establishing moisture allowance in order to assist inspectors. The NIST Technical Advisor indicated that additional work needs to be done on this item and asks that comments be submitted from the fall regional meetings.

260-2 I HB 133, Chapter 4.7. Polyethylene Sheeting - Test Procedure - Footnote Step 3

(This item was removed from Voting status.
The Committee determined that additional work needs to be done and returned it to Informational status.)

Source: Western Weights and Measures Association (WWMA)

Purpose: Update HB 133, Chapter 4.7. Polyethylene Sheeting – Test Procedure to provide new density values for heavier density plastics that are currently in the marketplace.

Polyethylene bags labeled as High Density (HDPE) or similar language have been found to package products whose labeled net weights meet calculated target net weights when employing a density factor of 0.92 g/cm³. When a density factor of 0.95 g/cm³ is used, as appropriate, in the calculation for high density polyethylene materials, these products commonly fail to meet the calculated target net weight. Further testing of these packages of polyethylene bags reveals that one or more of the labeled width, thickness, or count statements are inaccurate. HDPE product distributors that place a net weight statement on their packages based upon the Linear Low Density Polyethylene (LLDP) density value (0.92 g/cm³), have an approximately 3 % advantage over the distributor that uses the correct, high density, factor.

Item Under Consideration: Amend the asterisked footnote below Step 3 as follows:

> ***Determined by ASTM Standard D 1505-98 **(or latest issue)** "Standard Method of Test for Density of Plastics by the Density Gradient Technique." For the purpose of this ~~**handbook**~~ **regulation, when** ~~**the actual density is not known**~~ **(D) is not labeled on the package,** the minimum density **(D) used to calculate the target net weight for linear low density polyethylene products (LLDP) and products other than high density (HDPE)** shall be 0.92 g/cm³ ~~**when the actual density is not known**~~**. For products labeled High Density, HDPE, or similar wording, that does not specify the minimum density (D) on the package label, the minimum density (D) used to calculate the target net weight shall be 0.95 g/cm³.**

Background/Discussion: A proposal was presented at the WWMA 2009 Annual Meeting in Los Cruces, New Mexico, that manufacturers and distributors of polyethylene bags labeled as "High Density," or HDPE, have been found to package products whose labeled net weights meet calculated target net weights when employing a density factor of 0.92 g/cm³. When a density factor of 0.95 g/cm³ is used, as appropriate, in the calculation for high density polyethylene materials, these products commonly fail to meet the calculated target net weight. Further testing of these packages of polyethylene bags reveals that one or more of the labeled width, thickness, or count statements are inaccurate.

For example, a box of HDPE has stated dimensions of 24 in x 40 in x .4 mil, and a count of 250. Using the only density factor found in HB 133, 0.92 g/cm³, the calculated target net weight, and that shown on the label, would be 6.38 lbs. If using the actual density factor for the HDPE bags of 0.95 g/cm³, the target net weight would be 6.59 lb. This means that HDPE product distributors that place a net weight statement on their packages based upon the

Linear Low Density Polyethylene (LLDP) density value (0.92 g/cm³), have an approximately 3 % advantage over the distributor that uses the correct, high density, factor.

When the original testing procedure was developed, HDPE bags had not yet entered the marketplace. Currently, this product is quite prevalent in the United States. Amending the test procedure will aid weights and measures inspectors in enforcing labeling requirements that allow true value comparisons and close a loophole within HB 133.

Original Proposal:

> ***Determined by ASTM Standard D 1505-98 **(or latest issue)** "Standard Method of Test for Density of Plastics by the Density Gradient Technique." For the purpose of this handbook, **when the actual density is not known,** the minimum density **used to calculate the target net weight** shall be 0.92 g/cm³ ~~when the actual density is not known~~. **For products labeled "High Density, HDPE, or similar wording, the minimum density (d) used to calculate the target net weight shall be 0.95 g/cm³.**

The 2009 WWMA Association supports this item and recommends that it be a Voting item.

NEWMA reviewed this item at their 2009 Interim Meeting and proposes this item be a Developing item.

At the NCWM 2010 Interim Meeting, comments were heard on this item and Item 232-1 together at the open hearings. The Committee heard support for the suggestion that the density factor should change from 0.92 g /cm³ to 0.95 g/cm³. A California official stated that the information provided by the WWMA was data extracted from Internet searches. Currently, manufacturers are complaining that under current practice, they cannot compete fairly.

Mr. Jackelen, with Berry Plastics urged the Committee to reject this proposal. Mr. Jackelen stated that 0.92 g/cm³ currently works for manufacturers and that changing it to 0.95 g/cm³ will cause undue cost and waste. M ost manufacturers do not make high density (HD) bags, but are producing blends. Mr. Jackelen also stated an additional reason to reject the proposal is 0.95 g/cm³ bags, if punctured will continue to tear.

A Weights and Measures Official stated that if you use the term HD, then you are bound by the 0.95 g/cm³ density. If you use the length x width x thickness x density to determine the net weight, then the density needs to be added to the package labeling. Another official stated that manufacturers should consider disclosing the density factor on every product as part of the labeling. It was voiced that if there are questions about an absolute 0.95 g/cm³ density, then there should be an alternate suggestion. Another official stated that 0.95 g/cm³ will be factored in when the density is not known. The Committee received letters that were reviewed on this item (refer to Appendix B). The Committee recommends moving the item under consideration forward as a Voting item.

At the 2010 NEWMA Annual Meeting in Groton, Connecticut, there was concern that there appears to be a lack of data on this item. It was not reviewed by all regions and not presented to industry to seek comments. The NEWMA L&R Committee felt that this item was not an emergency and would like to review comments received by all the regions and industry.

At the 2010 CWMA Annual Meeting in Springfield, Illinois, there were no comments heard on this item and the CWMA L&R Committee recommends that this item remain a Voting item.

At the 2010 NCWM Annual Meeting in St. Paul, Minnesota, an official stated that his comments were the same as he expressed in Item 232-4 (refer to the "Report of the 95th NCWM" [SP 1115, 2010]. The official stated that with the amendments recommended by another official expressed in Item 232-4, they would support this proposal. There is agreement that the role of the Conference is not to determine quality issues, but rather to set testing standards for inspectors. Moving this item to Informational status will allow time to receive additional information and data from manufacturers of polyethylene.

The Committee believes that additional work needs to be done on this item, including reviewing the labeling requirement of polyethylene. This may include requiring a mandatory statement and review of ASTM standards. The status of this item was changed to Informational during the 2010 Annual Meeting.

At the 2010 CWMA Interim Meeting, there were no comments heard on this item. The CWMA L&R Committee recommends that this move forward as an Informational item.

At the 2010 WWMA Annual Meeting, a state official commented that he is in support of this item with the proposed amended changes to replace the existing language with:

> *****Determined by ASTM Standard D 1505-98 **(or latest issue)** "Standard Method of Test for Density of Plastics by the Density Gradient Technique." For the purpose of this ~~**handbook**~~ **regulation, when** ~~**the actual density is not known**~~ **(D) is not labeled on the package,** the minimum density **(D) used to calculate the target net weight for linear low density polyethylene products (LLDP) and products other than high density (HDPE)** shall be 0.92 g/cm³ ~~**when the actual density is not known**~~**. For products labeled High Density, HDPE, or similar wording, that does not specify the minimum density (D) on the package label, the minimum density (D) used to calculate the target net weight shall be 0.95 g/cm³.**

The WWMA L&R Committee recommends this item as amended move forward as a Voting item.

At the 2010 SWMA Annual Meeting, there were no comments heard on this item. The SWMA L&R Committee would like to seek additional information and comments from industry, other than the material safety data sheets that were submitted. The SWMA L&R Committee recommends that this item move forward as an Informational item.

At the 2010 NEWMA Interim Meeting, there were no comments heard on this item. The NEWMA L&R Committee would like this item to move forward as an Informational item.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, a state official remarked that within their state there are extensive labeling problems with poly-labeling. She recommends that the Committee consider the revised WWMA language. It will provide guidance and language for when the density is not known.

The Committee recommends the revised language from the WWMA for adoption by NCWM.

At the 2011 NEWMA & CWMA Annual Meetings, there were no comments heard on this item and both regions recommended this move forward as a Voting item.

At the 2011 NCWM National Meeting held in Missoula, Montana, it was noted, there is also a corresponding proposal for the method of sale under Item 232-1. A state official expressed concern with the term "when D is not known." Currently, 0.92 g/cm³ is the lower density rating when "D" is not known. The proposed language will allow industry to use products with densities lower than the 0.92 g/cm³. Several states spoke in support of this item since it does provide clarity for the test procedure. This testing can be destructive unless the density is known. A letter from industry was received stating that 0.95 g/cm³ density may not represent the density of HDPW currently in the marketplace. They indicated that 0.948 g/cm³ is a more accurate factor. The Committee believes that additional data from industry needs to be received on the density factors before proceeding with this item. The Committee placed this item back into Informational status.

260-3 V HB 133, Section 2.3.8 Moisture Allowance - Pasta Products

(This item was returned to committee on a split vote)

Source: Southern Weights and Measures Association (SWMA)

Purpose: Amend HB 133 by adopting a 3 % moisture allowance for macaroni, noodle, and like products (pasta products).

Item Under Consideration: Amend HB 133, Chapters 1 and 2, Moisture allowance to be amended as follows and which will incorporate a 3 % moisture allowance for pasta products, adding the language in bold below:

- Chapter 1: Why do we allow for moisture loss or gain?

  - This handbook provides "moisture allowances" for some meat and poultry products, flour, **pasta products,** and dry pet food.

  - Test procedures for flour, **pasta products,** some meat, and poultry are based on the concept of a "moisture allowance" also known as a "gray area" or "no decision" area.

- Chapter 2: Moisture Allowances:

  - What is the moisture allowance for flour, **pasta products**, and dry pet food? The moisture allowance for flour, **pasta products,** and dry pet food is 3 % of the labeled net weight.

  Note: Pasta products means all macaroni, noodle, and like products packaged in Kraft paper bags, paperboard cartons, and/or flexible plastic bags with a moisture content of 13 % or less at the time of pack.

- Chapter 2: How is the average error for the moisture allowance corrected?

  - This handbook provides "moisture allowances" for some meat and poultry products, flour, **pasta products,** and dry pet food.

Background/Discussion: Studies indicate that moisture loss for pasta products is reasonably predictable over time. Pasta exhibits consistent moisture loss in all environments and packaging, which can vary more than 4 % due to environmental and geographic conditions. Although it eventually reaches equilibrium with the surrounding atmosphere, because it is hygroscopic, this balance does not occur until long after packaging and shipping.

At the 2010 Interim Meeting, the Committee heard support for this item from industry and stakeholders. If this item is approved, it will also amend the Moisture Allowance Table in HB 133 giving pasta a 3 % moisture allowance. The Committee reviewed the submitted study (refer to the "Report of the 95th NCWM" [SP 1115, 2010]). The Committee recommends moving the item under consideration forward as a Voting item.

At the 2010 NEWMA Annual Meeting held in Groton, Connecticut, a representative of the pasta industry gave the group an explanation of the item and expressed support for this item as written. The NEWMA L&R Committee also supports this item.

At the 2010 C WMA Annual Meeting held in Springfield, Illinois, a representative from the National Pasta Association stated the data supports the 3 % moisture allowance. A Weights and Measures Official commented that testing in their state does not support the proposal. An industry representative stated that guidance is needed for an established moisture allowance, and currently there are no guidelines to establish the moisture loss percentage.

At the 2010 NCWM Annual Meeting held in St. Paul, Minnesota, a representative for the National Pasta Association spoke on behalf of the proposal. This item will allow for a specific moisture loss percentage to be taken. Inspectors will now have a specific number that they can apply to the pasta product. Representatives of several pasta companies spoke in support of this item stating that it is consistent with numerous studies that have been done. A state director opposes this item, since pasta is known to have moisture loss due to the type of product it is. He further explained that applying a blanket 3 % moisture loss does not make sense, what may be good in Florida may not be good in New Mexico. A Weights and Measures Official stated that applying the 3 % does not stop an inspector from going into a distribution or point of pack to inspect; especially if the inspectors believe the packer is under filling packages. He urged that this proposal be supported to provide a tool. Another official felt that the proposal should be voted through, it is important to recognize guidelines for consideration. A pasta association representative also agreed that this work goes back a couple of decades, and that several studies were provided for consideration. Another representative explained that they pack to net weight. Pasta contains 10 % to 13 % moisture;

if the moisture standard is lowered the product falls apart along with the product quality. This item neither passed nor failed vote at the National and was returned to the Committee.

At the 2010 CWMA Interim Meeting, a state regulator provided information regarding informal testing of pasta products in their state. The concern is pasta can gain moisture as well as lose moisture; therefore, they oppose a national moisture allowance for pasta products. It was further explained that moisture loss/gain seems to be dependent upon the type of packaging used. This regulator also commented that product is no longer warehoused for long periods of time, and that it is mostly in climate controlled stores, which would prevent the need for a moisture allowance. Another state regulator agreed that a national standard may not be appropriate due to humidity differences from state to state. The CWMA L&R Committee is recommending that this item be Withdrawn.

At the 2010 WWMA Annual Meeting, a state official expressed support for adopting a 3 % moisture allowance for pasta, citing the significant work done and data provided by the National Pasta Association. The WWMA L&R Committee recommends that any additional data from studies be provided for review. The WWMA L&R Committee also recommends that this item move forward as a Voting item.

At the 2010 SWMA Annual Meeting, there were no comments heard on this item. The SWMA L&R Committee agrees that this item be Withdrawn. However, if further studies are developed, then this should be taken into consideration.

At the 2010 NEWMA Interim Meeting, the Conference expressed strong reservations about this proposal. Comments were heard regarding industry practices in regards to moisture loss when packing and if there is a need to codify the moisture loss allowance at all. A member commented that if this proposal passed, other industries would now approach the Conference and ask for specific moisture allowances for their products. The NEWMA L&R Committee recommends that this item be Withdrawn.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, an overview was presented by the National Pasta Association regarding history and studies that have been performed in regard to moisture loss of pasta. Pasta is a hygroscopic product, and changes in moisture content in the product may occur in the package due to atmospheric changes. Hot, dry, and air conditioned store environments have less humidity and will pull moisture from the product. Subsequently; tropical, wet and high humidity environments (seldom seen in U.S. stores) will pull moisture into the product. Pasta companies do pack to the law and have documented weight control programs, according to Ms. Jayne Hoover, with American Italian Pasta Company.

The Committee recommends this item for adoption by the NCWM.

At the 2011 NEWMA Annual Meeting held in Saratoga Springs, New York, a representative of the National Pasta Association gave a briefing on the history of this item. She remarked that pasta is a mixture of flour and water, and that a moisture loss allowance was granted through the Conference for flour. She noted that packages are filled to weight. However, in the distribution process they may lose weight. Some states argued that they cannot support this item, given that the data reflects inconsistent loss. There was a question regarding whether the courts specify that you must grant a percentage when you consider moisture loss. The Committee recommends that the item be Withdrawn and moisture allowance not be considered for pasta.

At the CWMA Annual Meeting in Grand Rapids, Michigan, a state official opposed this item stating that with proper storage and limited items on a store shelf; moisture loss is not an issue. A representative with the National Pasta Association (NPA) stated that within the legal framework, the law requires that reasonable variations due to moisture loss be considered. There is a legal obligation to allow for reasonable variation under good distribution and manufacturing practices. The NPA has made available the pasta study that they believe continues to remain valid. The makeup of the product and the packaging has not changed, in fact, it is moisture that is adding or subtracting weight in the package. A state official questions whether 3 % is the correct number to use and would like to see a bell curve of data. Another state official would like to see data from NPA on whether moisture is different at separate points within the distribution points and shelf life. There was concern expressed that an average is taken rather than taking into account the different regional areas within the United States. A stakeholder remarked that this is a complex issue; however, we need to keep the solution simple. One strategy would be to define what is

necessary to demonstrate moisture loss. Several states commented they are having issues resolving current moisture loss with companies, due to lack of guidance on the procedure for proper determination. The Committee is recommending the item be indicated as Informational.

At the 2011 NCWM Annual Meeting in Missoula, Montana, a representative from the NPA gave a presentation with background information and a brief legal overview on moisture loss. They also distributed a page with frequently asked questions regarding moisture loss in pasta (refer to Appendix I). A follow-up study (refer to Appendix I) that occurred in 2006 - 2007 shows a 2.5 % to 5 % moisture loss. Pasta consists of flour and water. Currently in HB 133 flour is given a moisture loss allowance of 3 %. Pasta is packaged in either breathable film or paperboard cartons. This allows for the pasta to breathe and not mold. The industry is requesting that this proposal be adopted by the Conference to give officials the guidance that is needed when performing inspections.

260-4 W HB 133, Seed Count for Agriculture Seed

(This item was Withdrawn.)

Source: Western Weights and Measures Association (WWMA)

Purpose: The WWMA calls for the NCWM to rescind action taken in adopting the provisions of NCWM 2010 L&R Agenda Item 260-2 (refer to Appendix H). The NCWM L&R Committee should undertake, or establish a WG to undertake, necessary studies, laboratory testing, field trials, and other appropriate measures to establish procedures for verification of the accuracy and repeatability of "mechanical seed counter" devices and/or to develop seed count procedures that are practical and reliable for field enforcement activities by Weights and Measures officials.

Item Under Consideration: Call for Reconsideration and/or Repeal of action taken at 2010 Annual Meeting of NCWM (refer to the "Report of the 95th NCWM" [SP 1115, 2010]) to amend HB 133 Sections 4.2. and to add a new Section 4.11. re: Seed Count Tests.

Background/Discussion: At the 2010 NCWM, the L&R Agenda Item 260-2 was not appropriately presented in full for adequate consideration and review by all Conference attendees prior to discussion, debate, and voting. Late into L&R Open Hearing discussions, it was clarified that the item intended to adopt (as the mandated HB 133 testing procedure for verification of the count of packaged corn, soybean, field bean, and wheat seeds) language from Section 12 "Mechanical Seed Count" of the "Rules for Testing Seeds" of the Association of Official Seed Analysts (AOSA) (Appendix F, refer to the "Report of the 95th NCWM" [SP 1115, 2010]). The publication of an incomplete proposal and delayed clarification of the full proposal impeded abilities to fully research the proposed testing methods, associated equipment, and to develop points for discussion.

Section 12 of the "Rules for Testing Seeds" (refer to Appendix H) requires multiple, specific, highly technical steps that present significant challenges with which to comply (i.e., opportunities for non-compliant packers to challenge procedures and test results). Additionally, equipment costs are excessive and Weights and Measures officials are not trained or qualified to perform all required tests.

Examples include:

Section 12. – Mechanical Seed Count

Concerns:

- Requires use of a "mechanical seed counter."
- Such devices are typically permanently installed in a laboratory setting.
- Extreme care is required for transport of seed counters to the field.
- Device cost is approximately $8,000.

Section 12.1 – Requires samples of 500 grams (soybean/corn/field beans), 100 grams (wheat)

- Instructs that samples are to be "received" in moisture proof containers.
- Samples must be retained in moisture proof containers "until the weight of the sample prepared for purity analysis is recorded."

Concerns:

- Above implies that samples are to be transferred to a laboratory for testing.
- Above indicates that sample is intended to be subjected to purity analysis.
- "Purity analysis" is a specific term in the seed inspection arena, requiring highly technical procedures performed by highly skilled technicians.
- Such are not procedures with which Weights and Measures officials are familiar.

Section 12.2 – Seed counter calibration

- Must manually count 10 sets of 100 seeds.
- Requires visual examination to ensure that seeds are "approximately the same size and shape as the seeds in a sample being tested."
- Combined sample of 1,000 seeds (manually counted) is passed through mechanical seed counter with device count not to vary more than ± 2 seeds from 1,000.
- If not within ± tolerance, "…clean mirrors; adjust feed rate and/or reading sensitivity… Rerun until within tolerance."

Concerns:

- Reference to "sample being tested" refers to required "purity analysis."
- Instruction to "rerun until within tolerance" includes no instruction to conduct additional trial counts for repeatability.
- Preliminary counts failing to meet tolerance could, theoretically, be unlimited.
- A single seed counter indication within tolerance may not indicate reliability.

Section 12.3 – Sample preparation *(Emphasis added)*

- "Immediately after opening the moisture proof container, mix and divide the submitted sample, in accordance with Section 2.2, to obtain a sample for purity analysis…"
- "Conduct the purity analysis to obtain pure seed for the seed count test."

Concerns:

- The term "divide" has specific meaning and requires very detailed procedural requirements set forth in the "Rules for Testing Seed" manual.
- Reference to "…in accordance with Section 2.2…" confirms the above.
- Section 2.2. states: "A suitable type of mechanical divider (conical, centrifugal, riffle, etc.) should be used." These procedures are not addressed in new § 4.11.
- Need for "suitable…divider" presents added expenses/device transport issues.
- Non-mechanical dividing methods permitted by the "Rules for Testing Seed" are labor intensive, very detailed, yet not incorporated into adopted Section 4.11.
- The directive to "conduct the purity analysis" is not followed by any instruction regarding how such is to be conducted.
- "Purity analysis" is a highly technical, detailed procedure with strict guidelines under "Rules for Testing Seed."
- Weights and Measures officials are not trained to perform such analyses.

Section 12.4 – Conducting the test

- "…test the pure seed portion from the purity test and record the number of seeds in the sample."

Concerns:

- Above specifies that the count test must be performed using "pure seed from the purity test."
- Again, Weights and Measures officials are not trained or qualified to perform purity analyses. In some states (e.g., California), licensing is required.

Summary of Concerns: The procedures adopted at the 2010 NCWM Annual Meeting require skills and expertise (seed purity analysis) for which weights and measures officials are not trained or qualified, and the procedure

provides no instruction whatsoever regarding how a purity analysis is to be performed. Equipment required (mechanical seed counters and dividers) is very costly and not suited for transport to the field. The adopted procedures for calibrating the mechanical seed counters do not address the potential for numerous failed tests (exceeding the ± 2 tolerance for a 1 000-seed sample), followed by a single in-tolerance test and do not require repeatability testing to verify that the device is reliable. Any deviations from the mandated procedures and use of required equipment subject Weights and Measures agencies to challenges to the test findings, and potential liabilities for taking enforcement actions (e.g., "hold" or "off-sale" orders) in violation of procedures. This item was prematurely approved without consideration of all concerns.

At the 2010 WWMA Annual Meeting, the WWMA L&R Committee recommended that this item move forward as a Voting item.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, Kurt Floren, Los Angeles, California, gave an overview of the reasons this item was submitted for consideration and/or repeal of action. He believes that the proposal that was voted in at the July 2010 NCWM meeting was deficient in several areas. A state official commented that the presentation brings up several areas that clearly need to be addressed. Several states support this item, but do agree that this is a large enough item to review that a WG should be formed. Other states voiced that this item should not move forward since the current language addresses the need for those states that test seed.

Anita Hall, representing the Association of Official Seed Analyst (AOSA), presented an overview on the history of testing seed and the development of test procedures. Ms. Hall reviewed how the existing HB 133 method is based on the AOSA method. She assured the Conference that the AOSA mechanical seed count method provides a reliable, reproducible, and practical procedure. Ms. Hall offered AOSA assistance in working with the Conference to provide training to weights and measures officials on the adopted procedure. A stakeholder with AOSA addressed some of the concerns presented in Mr. Floren's talk including: the word tolerance used by AOSA means MAV; field versus laboratory testing will need to be a jurisdictions decision.

The Committee recognizes that changes need to be made to the existing language in order to clarify the procedure. The Committee is requesting that a new proposal with modification(s) to existing language be resubmitted through a new proposal (NCWM Form 15). Once a proposal is received by the Committee, they will determine if a Subcommittee for seed needs to be formed. The Committee withdrew this item.

At the 2011 NEWMA, CWMA, and NCWM Annual meeting there were no comments heard on this item.

270 OTHER ITEMS – DEVELOPING ITEMS

INTRODUCTION

The NCWM established a mechanism to disseminate information about emerging issues which have merit and are of national interest. Developing items are those items that have not received sufficient review by all parties affected by the proposals or may be insufficiently developed to warrant review by the NCWM L&R Committee. The Developing items listed are currently under review by at least one regional association, Subcommittee, or WG.

The Developing items are marked according to the specific NIST handbook into which they fall – HB 130 or HB 133. The Committee encourages interested parties to examine the proposals included in the appendices and to send their comments to the contact listed in each part.

The Committee asks that the regional weights and measures associations, Subcommittees, and WGs continue their work to fully develop each proposal. Should an association, Subcommittee, or WG decide to discontinue work on a Developing item, the Committee asks that it be notified. When the status of an item changes because the submitter withdraws the item, the item will be listed in a table below. For more details on items moved from the Developing items list to the Committee's main agenda, refer to the new reference number in the main agenda.

270-1 D Fuels and Lubricants Subcommittee (FALS)

Source: The Fuels and Lubricants Subcommittee (FALS)

Purpose: Update the Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Regulation in HB 130. Another task will be to update the Basic Engine and Fuels, Petroleum Products, and Lubricants Laboratory Publication.

Item Under Consideration: FALS has met since the 2007 Annual Meeting and continues its work on a number of items in addition to preparing a major revision of the Fuel Ethanol Specifications.

Background/Discussion: The Subcommittee met on January 24, 2007, at the NCWM Interim Meeting to undertake a review of a number of significant issues related to fuel standards. Their first project was to undertake a major review and update of the Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Regulation in HB 130. The Subcommittee also met at the 2007 NCWM Annual Meeting and continued its work on a number of items in addition to preparing a major revision of the Fuel Ethanol Specifications.

An additional project will be to update and possibly expand the Basic Engine Fuels, Petroleum Products, and Lubricants Laboratory Publication. The Subcommittee will undertake other projects as time and resources permit.

At the 2009 NCWM Interim Meeting and Annual Meeting, the FALS Chairman informed the Committee that FALS is working toward getting changes made to the language within the document.

At the CWMA 2009 Interim, the WWMA 2009 Annual, the SWMA 2009 Annual, and the NEWMA 2009 Interim Meetings, there were no comments heard. The Associations recommend that this proposal remain a Developing item.

At the 2010 NCWM Interim Meeting, the FALS Chairman, Mr. Hayes, informed the Committee that FALS is still working on this project. No comments were heard during the open hearings, and the Committee agrees that this item should remain a Developing item.

At the 2010 NEWMA Annual Meeting held in Groton, Connecticut, no comments were heard on this item. The NEWMA L&R Committee recommends that this item remain Developmental.

At the 2010 CWMA Annual Meeting held in Springfield, Illinois, the NIST Technical Advisor provided information that NIST has begun work on the development of a handbook for State fuel laboratories.

At the 2010 NCWM Annual Meeting in St. Paul, Minnesota, a comment from a petroleum representative stated that this item is premature and that action needs to be taken by the EPA. Mr. Hayes, FALS Chairman, clarified that this item is for a laboratory guide and that FALS supports NIST efforts to develop a handbook for state fuel laboratories. The item mentioned by the petroleum representative is for a new proposal that is being submitted through the regions modifying HB 130, as a result of a potential EPA waiver for gasoline containing more than 10 volume percent ethanol.

At the 2010 fall regional meetings, all of the Associations are recommending that this item be a Developmental item.

At the 2011 NCWM Interim Meeting held in Dallas, Texas, the NIST Technical Advisor reported that a draft laboratory guide for state laboratories will be available for distribution and comment by March 2011. The Committee recommended this item move forward as Informational.

Ron Hayes added that FALS is considering a number of new items including:

- Section 3.2.5. – possible deletion of altitude adjustment for octane and economy grades
- Section 3.2.4. – establish a nozzle requirement for diesel fuel to prevent misfueling of gasoline vehicles

- Section 4.4. – establish nozzle color coding system for retail motor fuel dispensers for product identification
- Reference ASTM microbial contamination standards
- Reference ISO 22241.1 NOx Reduction Agent Part 1 – Quality Requirements (quality standard for Diesel Exhaust Fluid)
- Section 3.1.2. – Retail Dispenser Labelling – Review for potential clarification of "gasoline" identity on retail motor fuel dispensers
- Establish regulations to determine if OEM labelled claims for Automatic Transmission & Tractor Fluids are met

At the NEWMA Annual Meeting in Saratoga Springs, New York, the Committee agreed that additional work is needed to establishing a requirement for misfueling.

At the CWMA Annual meeting in Grand Rapids, Michigan, the FALS Chairperson noted the first draft related to misfueling was released for comment on June 6, 2011.

At the 2011 NCWM Annual Meeting in Missoula, Montana, the FALS Chairperson gave an update. FALS is working on the altitude adjustment table. Today's vehicle population requires fuel with the same octane requirements regardless of altitude. A state official expressed concern that unleaded fuel is currently marketed as regular and unleaded 85 octane. FALS is in agreement that ASTM needs to address this issue as it involves pre-1971 vehicles. Currently, all engine manufacturers require no less than 87 octane. The NIST Technical Advisor remarked that a second draft laboratory guide will be made available prior to October 2011 for distribution and review.

If you would like to participate in this Subcommittee, contact Mr. Ron Hayes, Chairman Fuels and Lubricants Subcommittee, at (573) 751-2922, e-mail: ron.hayes@mda.mo.gov, or Mr. David Sefcik, NIST at (301) 975-4868, e-mail: david.sefcik@nist.gov.

270-2 D Packaging and Labeling Subcommittee (PALS)

At the 2011 NCWM Interim meeting held in Dallas, Texas, the Packaging and Labeling Subcommittee (PALS) met for the first time to discuss ongoing issues and agenda items in regards to packaging and labeling regulations. There were 11 attendees that represented industry, state and county regulatory officials, and a NIST Technical Advisor.

The mission of PALS is to assist the Laws and Regulations Committee in the development of agenda items related to packaging and labeling. The Subcommittee will also be called upon to provide important and much needed guidance to the regulatory and consumer packaging communities on difficult questions. The Packaging and Labeling Subcommittee (PALS) will report to the NCWM Laws and Regulations Committee.

The NIST Technical Advisor reported that FTC will do a review of FPLA in 2013.

It was announced at the NEWMA and CWMA Annual meetings that Mr. Chris Guay is the Chair for this Subcommittee and he is actively seeking volunteers. Mr. Guay has requested at least one representative from each region.

At the 2011 NCWM Annual Meeting, this Subcommittee was unable to meet since the Chair was not in attendance. Volunteers were solicited for this Committee.

NCWM has appointed Mr. Chris Guay, Procter and Gamble, to Chair the Subcommittee that will include state or local weights and measures officials and representatives from regulated industries. Anyone interested in an appointment to the Packaging and Labeling Subcommittee, please contact Mr. Guay at (513) 983-0530, e-mail: guay.cb@pg.com or Mr. Sefcik, NIST at (301) 975-4868, e-mail: david.sefcik@nist.gov.

Mr. John Gaccione, Westchester County, New York, Chairman
Mr. Joe Benavides, Texas
Ms. Jonelle Brent, Illinois
Mr. Raymond Johnson, New Mexico
Mr. Tim Lloyd, Montana

Mr. Ron Hayes, Missouri, Chairman FALS

Mr. Lance Robertson, Canada, Technical Advisor
Mr. Rob L. Underwood, Associate Member Representative

Ms. Lisa Warfield, NIST Technical Advisor: e-mail: lisa.warfield@nist.gov
Mr. David Sefcik, NIST Technical Advisor: e-mail: david.sefcik@nist.gov

Laws and Regulations Committee

Appendix A

Item 231-2: Handbook 130, Packaging and Labeling Regulation

Sections 6.12. Supplementary Quantity Declaration and
6.14 Qualification of Declaration Prohibited

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UNITED STATES OF AMERICA
FEDERAL TRADE COMMISSION
600 PENNSYLVANIA AVENUE, NW
WASHINGTON, DC 20580

Division of Enforcement
Bureau of Consumer Protection

November 4, 2010

Michael K. Tomenga,
Esq. Neville Peterson
LLP
1400 16th Street, Suite 350
Washington, DC 20036-2227

Dear Mr. Tomenga:

This is in response to your correspondence seeking staff's opinion regarding whether Clorox's charcoal labeling meets the Fair Packaging and Labeling Act (FPLA) requirements. Specifically, you ask whether the claim on the Kingsford charcoal packaging that a 13.9 lb. bag "lasts the same as a 15 lb. bag" constitutes an exaggerated quantity statement in violation of the FPLA. According to the materials submitted, this claim appears on the principal display panel of the product to the left of the net quantity declaration.

Charcoal briquettes are subject to the labeling requirements of the FPLA and the Commission's Rules and Regulations Promulgated Thereunder. Section 500.6(b) of the Commission's Regulations under the FPLA states that:

> The declaration of net quantity shall appear as a distinct item on the principal display panel, shall be separated (by at least a space equal to the height of the lettering used in the declaration) from other printed label information appearing above or below the declaration and, shall not include any term qualifying a unit of weight or mass, measure, or count, such as "jumbo quart," "giant liter," "full gallon," "when packed," minimum," or words of similar import. The declaration of net quantity shall be separated (by at least a space equal to twice the width of the letter "N" of the style of type used in the net quantity statement) from other printed label information appearing to the left or right of the declaration . . .

Commission staff believes that the "lasts the same as" statement on the Kingsford charcoal packaging does not qualify the package's unit of weight. Consumers would likely reasonably interpret that statement as a performance claim about the product. The claim appears as a distinct item on the display panel and is separated from the net quantity declaration in accordance with the requirements of the FPLA regulations. Therefore, we would not recommend that the Commission bring a law enforcement action for violations of the FPLA based on the facts presented in your letter. Nevertheless, under Section 5 of the Federal Trade Commission Act, the company must possess and rely upon reasonable substantiation for the claim and the claim should not be deceptive. *See* FTC Policy Statements on Deception and Substantiation: http://www.fte.govibcp/policyshnt/ad-decept.htm; http://www.ftc.govibcp/guides/ad3subst.htm. We have not evaluated Clorox's substantiation to

determine whether law violations exist.

This letter has not been reviewed or approved by the Commission or by any individual Commissioner and is given without prejudice to the right of the Commission to later rescind the advice and, where appropriate, to commence a law enforcement action. If you have any questions, you may contact me at (202) 326-3740, rspector@ftc.gov or Steve Ecklund at (202) 326-2841, seeklund@ftc.gov.

Sincerely yours,

Robin Rosen
Spector Attorney

cc: David A. Sefcik
National Institute of Standards and Technology
Weights and Measures Division
Laws and Metric Group
Stop 2600
Gaithersburg, MD 20899

Maureen Henzler
Weights & Measures Division, Kansas Department of Agriculture Program
Service Administrator II
Small Scales, Packages, and Price Verification
109 SW 9th Street
Topeka, KS 66612


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BUCKET O' RIBS
with Barbecue Sauce
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FULL RACK
OF RIBS
NET WT. 32 OZ. (2LB.)


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READY FASTER and BURNS LONGER!
47
KINGSFORD
The ORIGINAL
Charcoal Briquets
LASTS THE SAME AS A 9 LB BAG†
BRIQUETAS DE


4.98
HYVEE
KINGSFORD
Match Light
Instant Charcoal Briquets
CAUTION: COMBUSTIBLE.
PRECAUCIÓN: COMBUSTIBLE.
LASTS THE SAME AS A 13.5 LB BAG
NO LIGHTER FLUID NEE
READY in about 10 MINU
SURE FIRE GROOVES!
KINGSFORD



THE CLOROX COMPA
Ellen
Direct (510)
Fax (510)
e-mail: ellen.brown@cl

July 8, 2011

BY EMAIL and U.S. MAIL

Jonelle Brent
Weights and Measures Bureau Manager
Illinois Department of Agriculture
P.O. Box 19281
Springfield, IL 62794-9281

RE: Kingsford charcoal packaging

Dear Ms. Brent,

I am writing with respect to an item that I understand is on the agenda for The National Conference of Weights and Measures ("NCWM")'s national conference in July regarding the "lasts the same as" claim on Kingsford charcoal packaging.

Kingsford disagrees with NCWM's position that the "lasts the same as" claim on its charcoal packaging is misleading in any way. As you are aware, the Federal Trade Commission has agreed that this claim "does not qualify the package's unit of weight" and that "[c]onsumers would likely reasonably interpret that statement as a performance claim about the product." That said, we have removed this language from all Kingsford packaging printed as of mid-May 2011.

We would very much appreciate your sharing this information with your colleagues at the national conference in July.

Please don't hesitate to contact me should you have any questions.

Sincerely,

Ellen Brown

Ellen K. Brown
Corporate Counsel

cc: R. Timothy Columbus, Esq.

1221 Broadway | Oakland, CA 94612 | 510.271.7000 TheCloroxCompany.com

Appendix B

Item 232-1: Handbook 130, Method of Sale Regulation

Section 2.13.4. Declaration of Weight

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FROM: A. Godwin, Ventura County, California

Specification and Tolerance Committee:

Method of sale regulations require that Polyethelene sheeting and bags be labeled with:

1. Length and width
2. Thickness in mil or micron
3. Count (bags only)
4. Net weight

The theoretical weight is used by weights and measure officials to verify the required net weight statement. The net weight for the product is determined by the dimensions stated on the label. If the thickness is missing then the net weight cannot be verified. If the count of the bags is missing, the net weight cannot be verified. However, if the label has no net weight, but is labeled otherwise in full compliance (1-3) then a theoretical net weight can be calculated.

Now, there are several misunderstandings within the plastics industry.

1. The Plastics Industry believe they have a 10% Tolerance on the net weight and
2. Weights and Measures can only test polyethylene by weight.

First there has never been a 10% or any tolerance for polyethylene products.

Second, we test by weight as a courtesy to the holder of the product. All dimensions are required to be accurate. If the bag has an inaccurate length, width, thickness or count, weights and measures can still test the product. We can open the boxes in the sample; measure the length by unrolling the product. We can destroy the bags by cutting the bags in half to measure the mil. We can test and average the dimensions of the bags and count the total bags inside the box. All of these testing procedures of coarse will render the product no longer able to go back into the original box and will increase the testing time substantially.

Several years ago TYCO plastics contacted Marianne Delperdang and

used it too there advantage. If Weights and Measures can only hold us to 0.92 g/cm^3 then they could have an automatic 3% advantage in their weights. For example take the following dimensions

40 in x 48 in x 0.5 mil x 500 ct HDPD Can Liners

Using 0.92 g/cm^3 the net weight for this box would be 31.91 lb. Using 0.95 g/cm^3 the net weight for this box would be 32.95 lb

32.95-31.91= 1.04 1.04/32.95= .003 x 100= 3%

If the manufacturer of this product places a net weight statement on this label at 32.00 LB, then we as weights and measures officials can only hold the product to 32.00 lbs. This means that when I test the product and it averages 32.00 lbs net weight, I know the product is still short measure on one or more of the dimensions or count, since the product is not making a net weight at 32.95 lbs. As a weights and measures official, I can use this formula now to identify that this product has a shortage because I know that as a high density product this package is short on one or more dimensions. Therefore, I can start opening the boxes and measuring the product inside.

The original formula was developed when the only Poly product out there was linear low density. This is the minimum density for linear low density is 0.92 g/cm^3 which is reflected in the FIB 133 formula. The formula was developed and agreed upon so that weights and measures officials would test the product without destroying the product. Unless there is a change made to the formula officially recognizing the different densities then the only option left for weights and measures officials is to test to the dimensions to ensure fair value comparisons. Allowing an unfair advantage to the HDPE Distributors is not an option. We will just use the industry recognized density factor to identify the short measure product. It is their choice to correctly label density.

Respectfully,

Angela Godwin
Deputy Sealer
County of Ventura, California

PLASTICS iiir
CORPORATION AND
SUBSIDIARIES

LEADERSHIP BY DESIGN

June 26, 2010

National Conference on Weights and Measures 1135 M Street
Suite 110
Lincoln, Nebraska 68508
E-mail• don.onwiler@ncwm.net
Attn: Don Onwiler

RE: **Proposed Changes to Handbook 130, Method of Sale Regulation Section 2.13.4. "Declaration of Weight"**

Dear Don:

This letter is in reference to the proposed changes to Handbook 130, Method of Sale Regulation Section 2.13.4. "Declaration of Weight" (copy attached).

As you know, we attended the NCWM meeting in Nashville this year to present Berry Plastics' opposition to the above referenced Handbook 130 proposed changes. The purpose of this letter is to reiterate our opposition to this proposal.

Background
Berry Plastics Corporation is a leading manufacturer and marketer of HDPE and LLDPE Institutional Can Liners. Berry Plastics is a long time participant in this market and is well versed in the category mechanics and needs of stakeholders (end user, distributor and manufacturer).

Recommendation
Berry Plastics respectfully requests the NCWM Laws and Regulations Committee reject the above referenced proposal for three reasons:

1) **Blends —** Most HDPE Can Liners utilize blends of various materials (HDPE, LLDPE, LDPE and post consumer and post industrial resins as well as additives). The current use of the .92 density factor sets a bottom limit on product weight. If the .95 density factor is adopted it will require manufacturers to overstate the weight of the product.

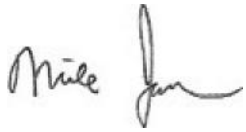
2) **Convention —** HDPE Can Liner product weights based on the .92 density factor are well accepted in the industry and the category participants (manufacturers, distributors and end users) are very accustomed to these product weights. Instead of clarifying the issue, changing the density factor will actually lead to confusion in the marketplace.

3) **Sustainability —** The strongest reason for rejecting this proposal relates to Sustainability. The Institutional Can Liner market is untracked; however, we estimate the size of the HDPE segment at 400 million pounds per year.
   a. If the .95 density factor is adopted, and if industry increases product weights an additional **12 million pounds** of plastic will find its way into the waste stream.
   b. Just the production of this additional plastic will generate an additional **18.5 million pounds of CO2.**
   c. Additional CO2 would be generated to transport and package the heavier product.

Given the above, we strongly recommend that this proposed revision be rejected.

Don, as always we appreciate all you do for the organization and we thank you for reviewing our position on this proposal.

I look forward to seeing you in St. Paul this July. Best regards,



Michael T. Jackelen
Vice President
Berry Plastics Corporation
1401 West 94th Street
Minneapolis, MN 55431
mikejackelen@berryplastics.com Telephone
Number — 952/885-9232

CC Lisa Warfield (lisa.warfield@nist.gov)

Material Safety Data Sheet

innovene

1. Chemical product and company identification

Product name	POLYETHYLENE (HDPE) HOMOPOLYMER
MSDS #	0000002010
Historic MSDS #:	None.
Code	0000002010 (NAP)
Product use	Consumer products. Industrial applications.
Supplier	Innovene USA LLC 200 E. Randolph Drive Chicago, IL 60606
Emergency phone:	1 (800) 424-9300 Outside the US: +1 703-527-3887 (CHEMTREC)
OTHER PRODUCT INFORMATION	1 (888) 260-6737 Toll free - North America email:MSDS@innovene.com

2. Composition/information on ingredients

Ingredient name	CAS #	% by weight
Polyethylene	9002-88-4	95 - 100

3. Hazards identification

Physical state	Granular solid. Pellets. Powder or flakes solid.
Color	White, translucent or colorless.
Emergency overview	
	This product has been evaluated and does not require any hazard warning on the label under established regulatory criteria.
	Handling and/or processing of this material may generate dust which may cause mechanical irritation of the eyes, skin, nose and throat.
Routes of entry	Dermal contact. Eye contact. Inhalation. Ingestion.
Potential health effects	
Eyes	No significant irritation expected other than possible mechanical irritation. Heated material can cause thermal burns. When heated to decomposition it emits acrid smoke and irritating fumes.
Skin	No significant irritation expected other than possible mechanical irritation. Heated material can cause thermal burns.
Inhalation	Dust: Exposure to airborne concentrations well above the recommended exposure limits may cause irritation of the nose, throat, and lungs. Vapor: If heated to more than 300°C, the product may form vapors or fumes which could cause irritation of the respiratory tract, coughing, and shortness of breath.
Ingestion	No significant health hazards identified.
Medical conditions aggravated by over-exposure	None identified.

See toxicological information (section 11)

4. First aid measures

Eye contact	Hot material: Flush eyes with plenty of water for at least 15 minutes. Seek medical assistance for mechanical removal of this material from the eye. The use of flush fluid, other than water, is not recommended. Cold material: flush eyes with plenty of water. Get medical attention if irritation occurs.
Skin contact	If burned by contact with hot material, flush skin immediately with large amounts of cold water. If possible, submerge area in cold water. No attempt should be made to detach polymer adhering to the skin or to remove clothing attached with molten material. Thermal burns require immediate medical attention. Cold material: Wash with soap and water.
Inhalation	If affected by fumes from heated material, remove from source of exposure and move the affected person into fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately.

5. Fire-fighting measures

Flammability of the product	May be combustible at high temperature.
Auto-ignition temperature	>343 °C
Flash point	Above 300°C decomposition occurs and flash of fumes may occur.
Products of combustion	These products are carbon oxides (CO, CO2). May also contain low levels of aldehydes, ketones, organic acids or hydrocarbons.
Unusual fire/explosion hazards	High dust concentrations have a potential for combustion or explosion. This material is not explosive as defined by established regulatory criteria.
Fire-fighting media and instructions	In case of fire, use water spray (fog), foam or dry chemicals. Do not use water jet.
Protective clothing (fire)	Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

6. Accidental release measures

Personal precautions	IN CASE OF A LARGE SPILL: Contact emergency personnel. Eliminate all ignition sources. Granules spilled on the floor can cause slipping. Fine dust clouds may form explosive mixtures with air. Do not touch or walk through spilled material. Use suitable protective equipment (See Section: "Exposure controls/personal protection"). Follow all fire fighting procedures (See Section: "Fire-fighting measures").
Environmental precautions and clean-up methods	If emergency personnel are unavailable vacuum or carefully scoop up spilled materials and place in an appropriate container for disposal. Avoid creating dusty conditions and prevent wind dispersal. Avoid contact of spilled material with soil and prevent runoff entering surface waterways. See Section 13 for Waste Disposal Information.
Personal protection in case of a large spill	Chemical/Dust Goggles. Personnel should wear protective clothing.

7. Handling and storage

Handling	There is a risk of being splashed with molten materials. Thermal burns are the most common injury caused while processing molten material. Do not inhale fumes or vapor from molten product. Use with adequate ventilation. When handling hot material, wear heat resistant protective gloves, clothing and face shield that are able to withstand the temperature of the heated product. Pneumatic conveying of powder and pellets can generate large static electrical charges. Electrical discharge in presence of air can cause an explosion. Earth all equipment. High dust concentrations have a potential for combustion or explosion. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.

Storage	Keep container tightly closed. Keep container in a cool, well-ventilated area. Keep away from heat and direct sunlight. The main hazards are related to pallet stock slippage and forklift truck maneuvers, which can cause injury to personnel. It is highly recommended that adequate procedures covering storage handling of pallets are established and maintained. These procedures must be kept up to date and regularly audited. In most cases, best practice is to stack pallets no more than 2 high. However, facilities responsible for storing the material should perform a site specific risk assessment to determine whether pallets can be stacked safely.

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Occupational exposure limits
Polyethylene	**ACGIH TLV (United States, 2005).** TWA: 10 mg/m³ 8 hour(s). Form: Inhalable fraction PNOS TWA: 3 mg/m³ 8 hour(s). Form: Respirable fraction PNOS

Control Measures	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Hygiene measures	Wash hands after handling compounds and before eating, smoking, using lavatory, and at the end of day.
Personal protection	
Eyes	Safety glasses with side shields. Use dust goggles if high dust concentration is generated.
Skin and body	Hot material: Wear heat-resistant protective gloves, clothing and face shield that are able to withstand the temperature of the molten product. Cold material: None required; however, use of protective clothing is good industrial practice.
Respiratory	Product processing, heat sealing of film, or operations involving the use of wires or blades heated above 300°C may produce dust, vapor or fumes. To minimize risk of overexposure to dust, vapor or fumes it is recommended that a local exhaust system is placed above the equipment, and that the working area is properly ventilated. If ventilation is inadequate, use certified respirator that will protect against dust/mist.
Hands	Hot material: Wear heat-resistant protective gloves that are able to withstand the temperature of molten product. Cold material: None required; however, use of gloves is good industrial practice. The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions. Consult your supervisor or S.O.P. for special handling directions

Consult local authorities for acceptable exposure limits.

9. Physical and chemical properties

Physical state	Granular solid. Pellets. Powder or flakes solid.
Odor	Odorless.
Color	White, translucent or colorless.
Melting point / Range	126 to 135 °C
Specific gravity	0.93 to 0.97
Density	Pellet density: 930-970 kg/m³ (0.930 to 0.970 g/cm³)
Solubility	Insoluble in cold water.

10. Stability and reactivity

Stability and reactivity	The product is stable.
Conditions to avoid	Stable under recommended storage and handling conditions (See Section: "Handling and storage"). If heated to more than 300°C, the product may form vapors or fumes which could cause irritation of the respiratory tract, coughing, and shortness of breath. Avoid dusting when handling and avoid all possible sources of ignition (spark or flame). To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.
Incompatibility with various substances	None identified.
Hazardous decomposition products	These products are carbon oxides (CO, CO_2). May also contain low levels of aldehydes, ketones, organic acids or hydrocarbons.
Hazardous polymerization	Will not occur.

11. Toxicological information

Chronic toxicity

Carcinogenic effects	No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH or the International Agency for Research on Cancer (IARC). No component of this product present at levels greater than 0.1% is identified as a carcinogen by the U.S. National Toxicology Program (NTP) or the U.S. Occupational Safety and Health Act (OSHA).
Mutagenic effects	No component of this product at levels greater than 0.1% is classified by established regulatory criteria as a mutagen.
Reproductive effects	No component of this product at levels greater than 0.1% is classified by established regulatory criteria as a reproductive toxin.
Teratogenic effects	No component of this product at levels greater than 0.1% is classified by established regulatory criteria as teratogenic or embryotoxic.

12. Ecological information

Ecotoxicity	No testing has been performed by the manufacturer.
Persistence/degradability	Not inherently biodegradable (polymer).
Mobility	This product is lighter than water and will float on the surface. This product is not likely to move rapidly with surface or groundwater flows because of its low water solubility.
Bioaccumulative potential	This product is not expected to bioaccumulate through food chains in the environment.
Other ecological information	Wildlife may ingest plastic pellets or bags. Although not toxic, such materials may physically block the digestive system, causing starvation or death.

13. Disposal considerations

Waste information	Recycle to process, if possible. Avoid contact of spilled material and runoff with soil and surface waterways. Consult an environmental professional to determine if local, regional or national regulations would classify spilled or contaminated materials as hazardous waste. Use only approved transporters, recyclers, treatment, storage or disposal facilities. Dispose of in accordance with all applicable local and national regulations.

Consult your local or regional authorities.

14. Transport information

Not classified as hazardous for transport (DOT, TDG, IMO/IMDG, IATA/ICAO)

15. Regulatory information

U.S. Federal regulations	US INVENTORY (TSCA): In compliance.
	This product is not regulated under Section 302 of SARA and 40 CFR Part 355.
	This product does not contain any hazardous ingredients at or above regulated thresholds.
SARA 313	
Form R - Reporting requirements	This product does not contain any hazardous ingredients at or above regulated thresholds.
Supplier notification	This product does not contain any hazardous ingredients at or above regulated thresholds.
	CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4):: This material is not regulated under CERCLA Sections 103 and 107.
State regulations	No products were found.
Inventories	AUSTRALIAN INVENTORY (AICS): In compliance. CANADA INVENTORY (DSL): In compliance. CHINA INVENTORY (IECS): In compliance. EC INVENTORY (EINECS): In compliance. (Polymer, exempt from listing.) JAPAN INVENTORY (ENCS): In compliance. KOREA INVENTORY (ECL): In compliance. PHILIPPINE INVENTORY (PICCS): In compliance.

16. Other information

Label requirements

This product has been evaluated and does not require any hazard warning on the label under established regulatory criteria.

HMIS® Rating :

Health	0
Flammability	1
Physical Hazard	0
Personal protection	X

National Fire Protection Association (U.S.A.)



History

Date of issue	08/03/2005.
Date of previous issue	No Previous Validation.
Prepared by	Product Stewardship

Notice to reader

NOTICE : This Material Safety Data Sheet is based upon data considered to be accurate at the time of its preparation. Despite our efforts, it may not be up to date or applicable to the circumstances of any particular case. We are not responsible for any damage or injury resulting from abnormal use, from any failure to follow appropriate practices or from hazards inherent in the nature of the product.

Technical Information

HDPE High Density Polyethylene

Description

High Density Polyethylene (HDPE) of The Dow Chemical Company (Dow) encompasses a range of products to balance excellent impact strength, toughness and stiffness as required. The HDPE products are high-purity powders made without any hydrocarbon comonomers and contain no secondary additives.

The following technical information notes a range of product capabilities. Your Dow representative is available to answer your questions and to provide reasonable technical support.

Physical Properties

Resin Properties	Test Method	Values[1]
Melt Index, I10 g/10 min	ASTM D 1238	1-120
Density, g/cc	ASTM D 792	0.95-0.97
Melting Point, °	DSC[2]	130-140
Average Particle Size, µm	Sieve[2]	<300

[1] Typical values, not to be construed as specifications. Users should confirm results by their own tests.

[2] Internal test method

Standard packages consist of supersacks of approximately 840 kg (1850 lb).

Handling Considerations

Material Safety Data Sheets (MSDS) for the product are available from Dow providing among other things, use, handling and disposal information. Request current MSDS from your Dow representative prior to working with these products, and read, understand, and practice the information provided. The standard practice of The Dow Chemical Company is to mail applicable MSDS when customers place an initial order and again when subsequent orders are placed if there has been a revision.

Spills, Disposal

Clean-up of spills is a matter of good general housekeeping. Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled.

Any disposal procedures must be in compliance with all applicable laws and other governmental enactments.

Health Hazards

The HDPE products are very low in single dose oral toxicity, may cause only minor irritation upon eye or skin contact due to mechanical effects, and are not absorbed through the skin. Therefore, they can be handled safely if reasonable care and caution are observed.

Combustibility

HDPE powders can be processed safely. The end user is responsible for hazard evaluation to ensure the compatibility of the HDPE in a specific process. Fine polyethylene dust formation or accumulation may lead to an explosive mixture with air. In addition, conveying or handling the product may cause a static ignition hazard. Refer to National Fire Protection Association (NFPA) RP77 "Recommended Practice on Static Electricity" for guidance in reducing the fire hazards associated with static electricity.

Form No. 776-00045-1005

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Product Stewardship

The Dow Chemical Company and its subsidiaries (Dow) has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our Product Stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our Product Stewardsh program rests with each and every individual involved with Dow products — from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use o Dow products. Current safety data sheets are available from Dow.

Dow Medical Application Policy

Dow will not knowingly sell or sample any product or service ("Product") into any commercial or developmental application that is intended for:

a. permanent (Long term) contact with internal body fluids or internal body tissues. Long term is a use which exceed 72 continuous hours (except 30 days for PELLETHANE™ polyurethane elastomers);
b. use in cardiac prosthetic devices regardless of the length of time involved; (Cardiac prosthetic devices include, but are not limited to, pacemaker leads and devices, artificial hearts, heart valves, intra-aortic balloons and contro systems, and ventricular bypass assisted devices);
c. use as a critical component in medical devices that support or sustain human life; or
d. use specifically by pregnant women or in applications designed specifically to promote or interfere with human reproduction.

Additionally, all Products intended for use in pharmaceutical applications, other than pharmaceutical packaging, must pass the current Pharmaceutical Liability Guidelines.

- For the products sold by the Plastics Portfolio, new business opportunities require a business assessment prior to sale or sampling of Dow products.
- Authorized distributors and resellers will adhere to this medical policy.
- The Dow Chemical Company does not endorse or claim suitability of their products for specific medical applicatio It is the responsibility of the medical device or pharmaceutical manufacturer to determine that the Dow product is safe, lawful, and technically suitable for the intended use. DOW MAKES NO WARRANTIES, EXPRESS OR IMPLIED, CONCERNING THE SUITABILITY OF ANY DOW PRODUCT FOR USE IN MEDICAL APPLICATIONS

Disclaimer

NOTICE: No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, the Customer is responsible for determining whether products and the information in this document are appropriate for the Customer's use and for ensuring that the Customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Dow assumes no obligation or liability for the information in this document. **NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.**

NOTICE: If products are described as "experimental" or "developmental": (1) product specifications may not be fully determined; (2) analysis of hazards and caution in handling and use are required; and (3) there is greater potential for Dow to change specifications and/or discontinue production.

Additional Information

North America
U.S. & Canada: 1-800-441-4369
1-989-832-1426
Mexico: +1-800-441-4369

Latin America
Argentina: +54-11-4319-0100
Brazil: +55-11-5188-9222
Colombia: +57-1-319-2100
Mexico: +52-55-5201-4700

Europe/Middle East +800-3694-6367
+32-3-450-2240

South Africa +800-99-5078

Asia Pacific +800-7776-7776
+60-3-7958-3392

www.dowplastics.com

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Form No. 776-00045-1005

Material Safety Data Sheet

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PE3408 (HDPE) Pipe & Fittings (Various Colors)

COMPANY IDENTIFICATION

Performance Pipe, a Division of
Chevron Phillips Chemical Company LP
2929 North Central Expressway #300
Richardson, TX. 75080

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (703)527-3887
Emergency Information Centers
are located in U.S.A.
Int'l collect calls accepted

PRODUCT INFORMATION: (972) 705-6543

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % PE3408 (HDPE) Pipe & Fittings (Various Colors)

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
POLYETHYLENE Chemical Name: ETHENE, HOMOPOLYMER CAS9002884	> 96.00%	NONE	NA
OR			
POLYETHYLENE-BUTENE COPOLYMER Chemical Name: 1-BUTENE, POLYMER WITH ETHENE CAS25087347	> 96.00%	NONE	NA
OR			

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POLYETHYLENE-HEXENE COPOLYMER			
Chemical Name: 1-HEXENE, POLYMER WITH ETHENE			
CAS25213029	> 96.00%	NONE	NA
ADDITIVES INCLUDING THE FOLLOWING			
LEAD CHROMATE PIGMENT			
Chemical Name: C.I. PIGMENT YELLOW 34			
CAS1344372	< 1.00%	NONE	NA
CARBON-BLACK			
Chemical Name: CARBON-BLACK			
CAS1333864	< 4.00%	3.5 mg/m3	ACGIH TWA
		3.5 mg/m3	OSHA PEL

COMPOSITION COMMENT:
All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

3. HAZARDS IDENTIFICATION

********** EMERGENCY OVERVIEW **********

Colored plastic (red, white, blue, grey, black, orange)

****

IMMEDIATE HEALTH EFFECTS
EYE:
Not expected to cause prolonged or significant eye irritation. If this material is heated, thermal burns may result from eye contact.
SKIN:
Contact with the skin is not expected to cause prolonged or significant irritation. Not expected to be harmful to internal organs if absorbed through the skin. If this material is heated, thermal burns may result from skin contact.
INGESTION:
Not expected to be harmful if swallowed.
INHALATION:
Not expected to be harmful if inhaled. If this material is heated, fumes may be unpleasant and produce nausea and irritation of the upper respiratory tract.
SIGNS AND SYMPTOMS OF EXPOSURE:
Thermal burns to the eye: may include pain, tearing, reddening, swelling, and impaired vision. Thermal burns to the skin: may include pain or feeling of heat, discoloration, swelling, and blistering. Respiratory irritation: may include coughing and difficulty breathing.

4. FIRST AID MEASURES

EYE:

If heated material should splash into eyes, flush eyes immediately with fresh water for 15 minutes while holding the eyelids open. Remove contact lenses, if worn. Get immediate medical attention.

SKIN:

If the hot material gets on skin, quickly cool in water. See a doctor for extensive burns. Do not try to peel the solidified material from the skin or use solvents or thinners to dissolve it. The use of vegetable oil or mineral oil is recommended for removal of this material from the skin.

INGESTION:

No specific first aid measures are required because this material is not expected to be harmful if swallowed.

INHALATION:

Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue.

5. FIRE FIGHTING MEASURES

FIRE CLASSIFICATION:

Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.

FLAMMABLE PROPERTIES:

FLASH POINT: NA
AUTOIGNITION: NA
FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA
EXTINGUISHING MEDIA:
C02, dry chemical, foam and water fog

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

This material will burn although it is not easily ignited. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

If possible, water should be applied as a spray from a fogging nozzle since this is a surface burning material. The application of high velocity water will spread the burning surface layer.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce carbon monoxide, original monomer, other hydrocarbons and hydrocarbon oxidation products, depending on temperature and air availability.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (703)527-3887
International Collect Calls Accepted

ACCIDENTAL RELEASE MEASURES:

Not applicable.

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7. HANDLING AND STORAGE

Avoid contact of heated material with eyes, skin, and clothing. Avoid breathing vapor or fumes from heated material.

Improper or careless handling of these products can result in serious personal injury or possibly death, especially during loading, unloading, movement or installation. Please take all necessary precautions and follow manufacturer's published procedures f0r safely handling these products,

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS
Use in a well-ventilated area. If heated material generates vapor, or fumes, use process enclosures, local exhaust ventilation, or other engineering controls to control exposure. Ventilation requirements must be locally determined. If handling results in dust generation, special ventilation may be needed to ensure that dust exposure does not exceed the OSHA PEL for nuisance dust.

PERSONAL PROTECTIVE EQUIPMENT
EYE/FACE PROTECTION:
No special eye protection is normally required. If this material is heated, wear chemical goggles and a face shield if engineering controls or work practices are not adequate to prevent eye contact.
SKIN PROTECTION:
No special protective clothing is normally necessary. If this material is heated, wear insulated clothing to prevent skin contact if engineering controls or work practices are not adequate to prevent skin contact.
RESPIRATORY PROTECTION:
No respiratory protection is normally required. If heated material generates vapor or fumes that are not adequately controlled by ventilation, wear a NIOSH approved respirator. Use the following

respirators: Organic Vapor.

9. PHYSICAL AND CHEMICAL PROPERTIES

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PHYSICAL DESCRIPTION:
Colored plastic (red, white, blue, grey, black, orange)

pH:	NA
VAPOR PRESSURE:	NA
VAPOR DENSITY (AIR=1):	NA
BOILING POINT:	NA
MELTING POINT:	122C (252F)
SOLUBILITY:	Insoluble in water
SPECIFIC GRAVITY:	0.95
DENSITY:	0.95 g/cm3
EVAPORATION RATE:	0
PERCENT VOLATILE (VOL):	0%

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:
Low molecular weight hydrocarbons, alcohols, aldehydes, acids and ketones can be formed during thermal processing.
CHEMICAL STABILITY:
Stable.
CONDITIONS TO AVOID:
Do not heat without adequate ventilation.
INCOMPATIBILITY WITH OTHER MATERIALS:
May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc. Avoid contact with organic solvents. May react with free halogens.
HAZARDOUS POLYMERIZATION:
Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:
The eye irritation hazard is based on data for a similar material.
SKIN EFFECTS:
The skin irritation hazard is based on data for a similar material. The acute dermal toxicity is based on data for a similar material.
ACUTE ORAL EFFECTS:

The acute oral toxicity is based on data for a similar material.
ACUTE INHALATION EFFECTS:
The acute respiratory toxicity is based on data for a similar material.
ADDITIONAL TOXICOLOGY INFORMATION:
This product contains polymerized ethylene. During thermal processing, this polymer can degrade. The three variables which control its degradation are the temperature, the length of time at that temperature, and the amount of oxygen available. Depending on the local processing conditions, a variety of low molecular weight hydrocarbons, alcohols, aldehydes, acids, and ketones can be formed. These materials are respiratory irritants. Prolonged and repeated breathing of fume

components has been shown to cause other adverse health effects. Exposure to processing emissions should be minimized by following all recommendations in this MSDS.

Pigments containing carbon black, lead chromate, nickel, antimony, or titanium compounds may have been incorporated into this product. The International Agency for Research on Cancer (IARC) has classified carbon black as a Group 2B carcinogen (possibly carcinogenic to humans) based on "sufficient evidence" in animals and "inadequate evidence" in humans. However, the pigments in this product are bound in a polymer matrix which severely limits its extractability, bioavailability and toxicity. The lead chromate pigment is also silica-encapsulated as well as bound in the polymer matrix. None of these pigments is likely to cause adverse health effects under recommended conditions of use.

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12. ECOLOGICAL INFORMATION

ECOTOXICITY:
This material is not expected to be harmful to aquatic organisms.
ENVIRONMENTAL FATE:
This material is not expected to be readily biodegradable.

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13. DISPOSAL CONSIDERATIONS

Contact local environmental or health authorities for approved disposal of this material.

---

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE FEDERAL DOT
DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE
DOT PACKING GROUP: NOT APPLICABLE

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15. REGULATORY INFORMATION

SARA 311 CATEGORIES:
1. Immediate (Acute) Health Effects: NO
2. Delayed (Chronic) Health Effects: NO
3. Fire Hazard: NO
4. Sudden Release of Pressure Hazard: NO
5. Reactivity Hazard: NO

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REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	22=TSCA Sect 5(a)(2)
02=MASS RTK	12=CERCLA 302.4	23=TSCA Sect 6
03=NTP Carcinogen	13=MN RTK	24=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIH TWA	25=TSCA Sect 8(a)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	26=TSCA Sect 8(d)
06=IARC Group 1	16=ACGIH Calc TLV	27=TSCA Sect 4(a)
07=IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
08=IARC Group 2B	18=DOT Marine Pollutant	29=OSHA CEILING
09=SARA 302/304	19=Chevron TWA	30=Chevron STEL
10=PA RTK	20=EPA Carcinogen	

The following components of this material are found on the regulatory lists indicated.

CARBON-BLACK
is found on lists: 02,08,10,11,13,14,17,28,
C.I. PIGMENT YELLOW 34
is found on lists: 01,03,04,05,10,11,28,

---

16. OTHER INFORMATION

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0;
HMIS RATINGS: Health 0; Flammability 1; Reactivity 0;
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:
This revision updates Sections 1 and 3.

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:
TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	PEL - Permissible Exposure Limit
C - Ceiling Limit	CAS - Chemical Abstract Service Number
A1-5 - Appendix A Categories	() - Change Has Been Proposed
NDA - No Data Available	NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard
(29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology
and Health Risk Assessment Unit, CRTC, P.O. Box 1627, Richmond, CA 94804

****

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may

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be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

****
THIS IS THE LAST PAGE OF THIS MSDS
****

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PTT Chemical Public Company Limited

123 Suntowers Building B, 31st - 35th Floor, Vibhavadi Rangsit Rd.,
Chompon,Chatuchak, Bangkok 10900, Thailand
Tel. +66 (0) 2265 8400 Fax. +66 (0) 2265 8500

MATERIAL SAFETY DATA SHEET

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product:	**InnoPlus HDPE Black Compound**
Chemical Name and Synonyms:	High Density Polyethylene Black Compound
CAS No.:	Mixture
Company Identification/Supplier:	- PTT Chemical Public Company Limited 14 I-1 Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong 21150,Thailand - Bangkok Polyethylene Public Company Limited Maptaphut Industrial Estate 4-I10 Rd., Maptaphut , Muang, Rayoung 21150 Thailand
Emergency Telephone No:	+66(0)-3892-1191

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	AMOUNT
Polyethylene	9002-88-4	< 100% weight
Carbon Black	1333-86-4	< 3% weight
Additive	Various	< 3% weight

NOTE:
This product is not considered a hazardous material at temperatures below the melting point as determined in Section 9.

SECTION 3 – HAZARDS IDENTIFICATION

PHYSICAL/CHEMECAL HAZARDS:
This product has been evaluated and does not require any hazard warning on the label under established regulatory criteria. High dust concentrations have a potential for combustion or explosion.

HUMAN HEALTH HAZARDS:
Not classified as dangerous. Handling and/or processing of this material may generate dust which may cause mechanical irritation of the eyes, skin, nose and throat.

ENVIRONMENTAL HAZARDS:
Not classified as dangerous.

EFFECTS AND SYMTOMS:

Eyes

No significant irritation expected other than possible mechanical irritation. Heated material can cause thermal burns. When heated to decomposition it emits acid smoke and irritating fumes.

Skin

No significant irritation expected other than possible mechanical irritation. Heated material can cause thermal burns.

Inhalation

Dust: Exposure to airborne concentrations well above the recommended exposure limits may cause irritation of the nose, throat, and lungs.

Vapor: If heated to more than 300℃, the product ma y form vapors or fumes which could cause irritation of the respiratory tract, coughing, and shortness of breath.

Ingestion

No significant health hazards identified.

SECTION 4 – FIRST AID MEASURES

EYE CONTACT

Flush eyes with running water immediately while holding the eyelids open. Remove contact lens, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get medical attention.

SKIN CONTACT

Molten resin: If molten material comes in contact with the skin, cool under ice water or running steam of water. Do not attempt to remove the material from the skin. Remove could result in severe tissue damage. Get medical attention.

INGESTION

If swallowed, do not induce vomiting. Give a person a glass of water or milk to drink and get immediate medical attention. Never give anything by mouth to an unconscious person.

INHALATION

Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue.

SECTION 5 – FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING AGENTS: Water haze, Foam, Chemical powder.

FOR SAFETY REASONS UNSUITABILITY EXTIGUISHING AGENTS: Water jet.

SPECIAL HAZARDS:

Caused by the material, its product of combustion or resulting gases: In case of fire it can release: Water (H_2O), Carbon dioxide (CO_2), and when lacking oxygen (O_2), Carbon monoxide (CO). The products of the burning are dangerous.

PROTECTIVE EQUIPMENT:

Use a mask with universal filler. Use self-contained breathing apparatus within confined rooms.

InnoPlus

SECTION 6 – ACCIDENTAL RELEASE MEASURE

PROTECTIVE MEASURES: Eliminate all sources of ignition in vicinity of spilled material. Wear appropriate personal protective equipment when cleaning up spills.

SPILL MANAGEMENT: Avoid creating dust clouds. Shovel, sweep up or use industrial vacuum cleaner to pick up. Place in container for proper disposal. Reduce airborne dust and prevent scattering by moistening with water. Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. If heated material is spilled, allow it to cool before proceeding with disposal method.

SECTION 7 – HANDLING AND STORAGE

INFORMATION FOR SAFE HANDLING:
No special requirements necessary, if handled at room temperature.
Avoid spilling the product, as this might cause falls.
Potential toxic/irritating fumes may be evolved from heated material.
Provide appropriate ventilation for such processing conditions.
Take precautionary measures against explosion risks, as all types of polymers may develop dust during transporting or grinding of granules.
REQUIREMENTS TO BE MET BY STOREROOMS AND CONTAINERS:
Take precautionary measures to prevent the formation of static electricity.
Do not smoke.
Ground equipment electrically.
INFORMATION ABOUT STORAGE IN ONE COMMON STORAGE FACILITY:
Not required.
FURTHER INFORMATION ABOUT STORAGE CONDITIONS:
Protect from heat and direct sunlight.
Store under dry conditions.
SPECIFIC APPLICATIONS:
For safe stacking follow the storage recommendations specific for this product.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
Use in a well-ventilated area. If handling results in dust generation, special ventilation may be needed to ensure that dust exposure does not exceed the OSHA PEL for nuisance dust. If heated material generates vapor or fumes, use process enclosures, local exhaust ventilation, or other engineering controls to control exposure.
PERSONALPROTECTIVE EQUIPMENT:
Respiratory system
Product processing, heat sealing of film or operations involving the use of wires or blades heated above 300℃ may produce dust, vapor or fumes . To minimize risk of overexposure to dust, vapor or fumes it is recommended that a local exhaust system is placed above the equipment, and that the working area is properly ventilated.
If ventilation is inadequate, use certified respirator that will protect against dust/mist.



Skin and body
Hot material: Wear heat-resistant protective gloves, clothing and face shield able to withstand the temperature of the molten product.
Cold material: None required; however, use of gloves is good industrial practice.
Hand
Hot material: Wear heat-resistant protective gloves able to withstand the temperature of the molten product. Cold material: None required; however, use of gloves is good industrial practice.
The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices very, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.
Eyes
Safety glasses with side shields. Use dust goggles if high dust concentration is generated.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Pellets.
ODOR:	Slight waxy odor.
COLOR:	Black.
FREEZING POINT:	Not Applicable.
MELTING POINT:	125 – 135 ℃
BOILING POINT:	Not Applicable.
FLASH POINT:	Not Applicable.
DENSITY:	0.955 – 0.980 g/cm^3
SPECIFIC GRAVITY:	Not Applicable.
AUTOIGNITION TEMPERATURE:	Not Applicable
EXPLOSIVE PROPERTIES	High dust concentrations have a potential for combustion or explosion
PERCENT VOLATILE:	Not Applicable.
VAPOR PRESSURE:	Not Applicable.
WATER SOLUBILITY:	Insoluble.

SECTION 10 – STABILITY AND REACTIVITY

CHEMICAL STABILITY:
This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
CONDITIONS TO AVOID: Not Applicable.
INCOMPATIBILITY WITH OTHER MATERIALS:
May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.
HAZARDOUS DECOMPOSTION PRODUCTS:
Low molecular weight hydrocarbon, carbon dioxide, carbon monoxide, unidentified organic compounds.

SECTION 11 – TOXICOLOGICAL INFORMATION

PRIMARY IRRITANT EFFECT:
ON THE SKIN: No irritant effect.
ON THE EYES: No irritant effect.
SENSITIZATION: No sensitizing effect known.
ADDITIONAL TOXICOLOGICAL INFORMATION:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

SECTION 12 – ECOLOGICAL INFORMATION

MOBILITY AND BIOACCUMULATION POTENTIAL:
Floats on water. There is no bioaccumulation.
OTHER INFORMATION:
This product is not biodegradable.
GENERAL NOTES:
The product is not toxic, small particles can have physical effects on water and Soil organisms.

SECTION 13 – DISPOSAL CONSIDERATIONS

DISPOSAL COSIDERATION/WASTE INFORMATION:
Recycle to process, if possible. Avoid contact of spilled material and runoff with soil and surface waterways. Consult an environmental professional to determine if local, regional or national regulations would classify spilled or contaminated materials as hazardous waste. Use only approved transporters, recyclers, treatment, storage or disposal facilities. Dispose of in accordance with all applicable local and national regulations.

SECTION 14 – TRANSPORT INFORMATION

TRANSPORT/ADDITIONAL INFORMATION:
According to national and international guidelines, which regulate the road-, rail-, air- and sea-transport, this product is classified as not dangerous.

SECTION 15 – REGULATION INFORMATION

U.S. Federal Regulations;	US INVENTORY (TSCA)	: In compliance.
Inventories;	AUSTRALIAN INVENTORY (AICS)	: In compliance.
	CANADA INVENTORY (DSL)	: In compliance.
	CHINA INVENTORY (IECS)	: In compliance.
	EC INVENTORY (EINECS)	: In compliance.
	JAPAN INVENTORY (ENCS)	: In compliance.
	KOREA INVENTORY (ECL)	: In compliance.

SECTION 16 – OTHER INFORMATION

Date of issue: Feb-2008
Prepare by: Technical Support, Polymer VC, PTT Chemical PLC.
NOTICE: This Material Data Sheet has been based upon data considered to be accurate at the time of its preparation. Despite our efforts, it may not be up to date or applicable to the circumstances of any particular case. We take no responsibility for inappropriate use, processing and handling by purchasers and users of the product.

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Product Name: PAXON CROSS-LINKABLE HDPE - All Colors Except Red
Revision Date: 04 May 2010

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: PAXON CROSS-LINKABLE HDPE - All Colors Except Red
Product Description: Polymer, see Section 16 for applicable grades.

Intended Use: Rotational molding

COMPANY IDENTIFICATION

Supplier:	**EXXONMOBIL CHEMICAL COMPANY** P.O. BOX 3272 HOUSTON, TX. 77253-3272 USA
24 Hour Health Emergency	(800) 726-2015
Transportation Emergency Phone	(800) 424-9300 or (703) 527-3887 CHEMTREC
Product Technical Information	(281) 870-6000/Health & Medical (281) 870-6884
Supplier General Contact	(281) 870-6000

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

NOTE: The product may contain varying levels of additives such as slip and anti-blocking agents, anti-oxidants, stabilizers and processing aids.

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL PHYSICAL / CHEMICAL EFFECTS

High dust levels may create potential for explosion. Spilled pellets present a slipping hazard on hard surfaces. Thermal burn hazard - contact with hot material may cause thermal burns. Material can accumulate static charges which may cause an ignition.

POTENTIAL HEALTH EFFECTS

Material is essentially non-toxic. However, if dust is generated, it could scratch the eyes and cause minor irritation to the respiratory tract. When heated, the vapors/fumes given off may cause respiratory tract irritation.

NFPA Hazard ID:	Health:	1	Flammability:	1	Reactivity: 0
HMIS Hazard ID:	Health:	1	Flammability:	1	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

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SECTION 4 FIRST AID MEASURES

INHALATION

In case of adverse exposure to vapors and / or aerosols formed at elevated temperatures, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest.

SKIN CONTACT

Wash contact areas with soap and water. For hot product: Immediately immerse in or flush affected area with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze and get prompt medical attention.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Assure an extended cooling down period to prevent re-ignition. Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: High dust levels may create potential for explosion.

Hazardous Combustion Products: Smoke, Fume, Aldehydes, Oxides of carbon, Flammable hydrocarbons, Acetic acid

FLAMMABILITY PROPERTIES

Flash Point [Method]: 343C (649F) [Estimated ASTM E136]
Flammable Limits (Approximate volume % in air): LEL: N/D UEL: N/D
Autoignition Temperature: 343°C (649°F) [Estimated]

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The

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National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Spilled pellets present a slipping hazard on hard surfaces. Prevent dust cloud. Small Dry Spills: With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Skim from surface.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Prevent entry into waterways, sewers, basements or confined areas. For Large Spills: Cover spill with plastic sheet or tarpaulin to minimize spreading.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid conditions which create dust. Avoid elevated temperatures for prolonged periods of time. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Prevent small spills and leakage to avoid slip hazard. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Material can accumulate static charges which may cause an electrical spark (ignition source). Care should be taken when storing and handling this product. Apart from the specific nature of the polymer product, conditions such as humidity, sunlight, and temperature have an influence on the way the product behaves during storage and handling. Special attention should be paid to avoid inappropriate stacking of palletized bags or other package units. Indeed, polymer products may be dimensionally unstable under certain conditions. Avoid conditions generating heat during transfer operations.

Loading/Unloading Temperature: 20°C (68°F) [Ambient]

Transport Temperature: 20°C (68°F) [Ambient]
Transport Pressure: 101 kPa (15 psia) [Ambient]

Static Accumulator: This material is a static accumulator.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Store in a cool, dry place with adequate ventilation. Keep away from incompatible materials, open flames, and high temperatures. Do not store in open or unlabelled containers.
Storage Temperature: 20°C (68°F) [Ambient]
Storage Pressure: 101 kPa (15 psia) [Ambient]

Suitable Containers/Packing: Boxes; Bags; Hopper Cars

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

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Exposure limits/standards for materials that can be formed when handling this product: For dusty conditions, OSHA recommends for particulates not otherwise regulated an 8-hour TWA of 15 mg/m3 (total dust), 5 mg/m3 (respirable fraction); ACGIH recommends for insoluble and poorly soluble particles not otherwise specified an 8-hour TWA of 10 mg/m3 (inhalable particles), 3 mg/m3 (respirable particles).

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Adequate ventilation should be provided so that exposure limits are not exceeded. SPECIAL PRECAUTIONS: Should significant vapors/fumes be generated during thermal processing of this product, it is recommended that work stations be monitored for the presence of thermal degradation by-products which may evolve at elevated temperatures (for example, oxygenated components). Processors of this product should assure that adequate ventilation or other controls are used to control exposure. It is recommended that the current ACGIH-TLVs for thermal degradation by-products be observed. Contact your local sales representative for further information.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Particulate air-purifying respirator approved for dust / oil mist is recommended.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

If product is hot, thermally protective, chemical resistant gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

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If product is hot, thermally protective, chemical resistant apron and long sleeves are recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Solid
Form: Pellet, Powder
Color: Variable
Odor: Odorless
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 60 F): 0.95 - 0.953
Flash Point [Method]: 343C (649F) [Estimated ASTM E136]
Flammable Limits (Approximate volume % in air): LEL: N/D UEL: N/D
Autoignition Temperature: 343°C (649°F) [Estimated]
Boiling Point / Range: N/A
Vapor Density (Air = 1): N/A
Vapor Pressure: N/A
Evaporation Rate (n-butyl acetate = 1): N/A
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): N/D
Solubility in Water: Negligible
Viscosity: N/A
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/A
Melting Point: 126°C (259°F) - 132°C (270°F)
Hygroscopic: No

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Avoid elevated temperatures for prolonged periods of time. High dust concentrations., Do not heat above flashpoint.

MATERIALS TO AVOID: Strong oxidizers, Fluorine

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HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity: Data available.	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: Data available.	Negligible hazard at ambient/normal handling temperatures. Based on test data for structurally similar materials.
Ingestion	
Toxicity: Data available.	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity: Data available.	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.
Eye	
Irritation: Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS

For the product itself:

Dust may be irritating to the eyes and respiratory tract.
Elevated temperatures or mechanical action may form vapors, mists or fumes which may be irritating to the eyes and respiratory tract.

Contains additives that are encapsulated in the polymer. Under normal conditions of processing and use the encapsulated additives are not expected to pose a health hazard, however, grinding of the polymer is not recommended.

Contains:

This material may contain carbon black inextricably bound in a polymer. Certain carbon blacks have proved carcinogenic in animal studies. Inhalation animal studies of high concentrations resulted in chronic inflammation, lung fibrosis and lung tumors. Epidemiology studies of workers include findings of bronchitis, pneumonia, emphysema and excess cancer. Carbon black inextricably bound in a polymer or other matrix should present little or no hazard.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

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SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.
Material -- Not expected to be harmful to terrestrial organisms.

MOBILITY

Material -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Material -- Expected to be persistent.

Hydrolysis:

Material -- Transformation due to hydrolysis not expected to be significant.

Photolysis:

Material -- Transformation due to photolysis not expected to be significant.

Atmospheric Oxidation:

Material -- Transformation due to atmospheric oxidation not expected to be significant.

BIOACCUMULATION POTENTIAL

Material -- Potential to bioaccumulate is low.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Suitable routes of disposal are supervised incineration, preferentially with energy recovery, or appropriate recycling methods in accordance with applicable regulations and material characteristics at the time of disposal.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT): Not Regulated for Land Transport

LAND (TDG): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: TSCA

EPCRA: This material contains no extremely hazardous substances.

CWA / OPA: Plastic pellets are defined by the US EPA under the Clean Water Act (40CFR122.26) as a "significant material" which requires any industrial plant that may expose pellets to storm water to secure a storm water permit. Violations of the rule carry the same penalties as other Clean Water Act violations. Pellets found in storm water runoff are subject to EPA regulations with the potential for substantial fines and penalties.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
CARBON BLACK	1333-86-4	1, 4, 10, 16

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Revision Changes:
Section 06: Notification Procedures - Header was modified.

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Product Name: PAXON CROSS-LINKABLE HDPE - All Colors Except Red
Revision Date: 04 May 2010

Section 10 Stability and Reactivity - Header was modified.
Section 13: Disposal Recommendations - Note was modified.
Section 08: Personal Protection was modified.
Section 08: Hand Protection was modified.
Section 07: Handling and Storage - Handling was modified.
Section 07: Handling and Storage - Storage Phrases was modified.
Hazard Identification: Physical/Chemical Hazard was modified.
Section 07: Loading/Unloading Temperature C(F) was modified.
Section 07: Transport Temperature C(F) was modified.
Section 07: Transport Pressure kPa was modified.
Section 07: Storage Temperature C(F) was modified.
Section 07: Storage Pressure kPa was modified.
Section 05: Hazardous Combustion Products was modified.
Section 06: Accidental Release - Spill Management - Water was modified.
Section 09: Relative Density - Header was modified.
Section 09: Autoignition Temperature was modified.
Section 08: Hand Protection was modified.
Section 08: Eye Protection was modified.
Section 14: Sea (IMDG) - Header was modified.
Section 14: Air (IATA) - Header was modified.
Section 14: LAND (TDG) - Header was modified.
Section 14: LAND (DOT) - Header was modified.
Section 15: List Citation Table - Header was modified.
Section 14: LAND (DOT) - Default was modified.
Section 14: LAND (TDG) Default was modified.
Section 14: Sea (IMDG) - Default was modified.
Section 14: Air (IATA) - Default was modified.
Section 16: Materials Covered was modified.
Section 08: Exposure limits/standards was modified.
Section 15: OSHA Hazard Communication Standard was modified.
Section 11: Tox Table - Header was modified.
Hazard Identification: OSHA - May be Hazardous Statement was modified.
Section 06: Notification Procedures was modified.
Composition: Footnotes was modified.
Section 09: Oxidizing Properties was modified.
Section 11: Chronic Tox - Product was added.
Section 01: Product Code - Header was deleted.
Section 11: Chemical Name - Header was deleted.
Section 11: CAS Number - Header was deleted.
Section 11: List Citation - Header was deleted.
Section 11: Tox List Cited Table was deleted.

THIS MSDS COVERS THE FOLLOWING MATERIALS: Crosslinkable HDPE grades for which the grade name consists of a base polymer followed by a suffix referring to an additive package. Paxon 7203 and 7204 are black colored only (carbon black). Applicable designations follow. | Base polymers : | PAXON 7000X | PAXON 7003 | PAXON 7004 | PAXON 7203BLK (Black) | PAXON 7204BLK (Black) | Possible additive packages for PAXON 7003 and PAXON 7004: | BGE | BLK | BLU | BRN | DGR | GRY | JDG | NAT | ORG | PEL | RWK | WHT | YEL

PRECAUTIONARY LABEL TEXT:

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer.

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Caution! Excessive exposure to dust may cause irritation of the nose and throat, and mechanical irritation of the eyes. Avoid generating dust. Use adequate ventilation under dusty conditions to keep airborne levels below recommended exposure limits. If inhaled and symptoms develop, remove to fresh air and get medical attention.

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MHC: 0, 0, 0, 0, 0, 0

DGN: 4401772KUS (1007663)

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Warfield, Lisa

From: Kaye Leedham [kaye@amerpkg.com]
Sent: Tuesday, June 21, 2011 7:37 PM
To: jpg4@westchestergov.com; Warfield, Lisa
Subject: Letter of support higher density factor for HDPE
Attachments: Pub 16 excerpt.doc

Importance: High

Dear Mr. Gaccione and Ms. Warfield:

I am writing to you in support of higher density factor for HDPE. We are asking that the 0.95 g/cm cubed be recognized as the minimum density factor which would be applied when calculating the net weight of HDPE products. Imports, particularly those from China have an unfair advantage over domestic producers, and this change is necessary to ensure fair competition in our own marketplace.

Sincerely,

Kaye

American Packaging

Kaye Leedham
President/CEO
American Packaging
1515 Alvarado Street
San Leandro, CA 94577
Tel: 510-877-9000
Fax: 510-877-9500
www.amerpkg.com

http://www.nist.gov/pml/wmd/pubs/upload/pub16-2011-fulldoc-pdf.pdf

232 METHOD OF SALE REGULATION

232-1 V HB 130, Method of Sale Regulation, Section 2.13.4. Declaration of Weight

Source: Western Weights and Measures Association (WWMA)

Purpose: Update HB 130, Section 2.13.4. to provide new density values for heavier density plastics that are currently in the marketplace.

Item under Consideration: Amend HB 130, Method of Sale Regulation, Section 2.13.4. as follows:

2.13.4. Declaration of Weight. – The labeled statement of weight for polyethylene sheeting and film products under Sections 2.13.1.1. Sheeting and film, and 2.13.3.1. Bags, shall be equal to or greater than the weight calculated by using the formula below. The final value shall be calculated to four digits, and declared to three digits, dropping the final digit as calculated (for example, if the calculated value is 2.078 lb, then the declared net weight shall be 2.07 lb).

For SI dimensions:

M = T x A x D/1000, where:

M = net mass in kilograms

T = nominal thickness in centimeters

A = nominal length in centimeters times nominal width [*NOTE 6*, page 122] in centimeters

D = density in grams per cubic centimeter as determined by ASTM Standard D1505 68, Standard Method of Test for Density of Plastics by the Density Gradient Technique (or latest issue)

For the purpose of this regulation, **when D is not known,** the minimum density **(D) used to calculate the target net weight for linear low polyethylene products (LLPD) and products other than high density (HDPE)** shall be 0.92 g/cm3 **(when D is not known).**

For products labeled High Density (HDPE) or similar wording, the minimum density (D) used to calculate the target net weight shall be 0.95 g/cm³.

For inch-pound dimensions:

W = T x A x 0.03613 x D, where:

W = net weight in pounds;

T = nominal thickness in inches;

A = nominal length in inches times nominal width [*NOTE 6*, page 122] in inches;

D = density in grams per cubic centimeter as determined by ASTM Standard D1505 68, Standard Method of Test for Density of Plastics by the Density Gradient Technique (or latest issue);

and 0.03613 is a factor for converting g/cm3 to lb/in3.

For the purpose of this regulation, the minimum density shall be 0.92 g/cm3.

(Added 1977) (Amended 1980, 1982, 1987, 1989, 1990, **and** 1993, **and 201X**)

NOTE 6: *The nominal width for bags in this calculation is twice the labeled width.*

Background/Discussion: It was stated at the 2009 WWMA Annual Meeting in Los Cruces, New Mexico, thatmanufacturers and distributors of polyethylene bags are using the calculated target weight identified in HB 130 Section 2.13.4. to understate the net quantity of their labels. The polyethylene industry recognizes a density value of 0.92 g/cm³ for linear low density polyethylene (LLDP) products. When 0.92 g/cm³ is used to calculate the target net

weight of high density polyethylene (HDPE), the product may make the target net weight. However, when the appropriate density value of 0.95 g/cm³ is used to test HDPE, the product often fails to meet the calculated target net weight. Further testing reveals than one or more of the labeled width, thickness, or count statements are inaccurate.

It appears that some manufacturers are aware that weights and measures officials are restricted to testing HDPE product using the 0.92 g/cm³ value because the actual density value is not stated on the product label. Existing procedural guidelines do not address HDPE materials. When testing at manufacturing locations, weights and measures officials are able to obtain information regarding the density of the product directly from the manufacturer.
However, at distributor locations density information is not available and officials must test using the 0.92 g/cm³ value designated in HB 130 and HB 133 to verify the weight of the product. When the product has no net weight statement on the package, 0.92 g/cm³ is the only factor that the inspector may use to calculate the target net weight.
Initial proposal as submitted in 2009
Amend HB 130, Method of Sale Regulation, Section 2.13.4. as follows:
2.13.4. Declaration of Weight. – The labeled statement of weight for polyethylene sheeting and film products under Sections 2.13.1.1. Sheeting and film, and 2.13.3.1. Bags, shall be equal to or greater than the weight calculated by using the formula below. The final value shall be calculated to four digits, and declared to three digits, dropping the final digit as calculated (for example, if the calculated value is 2.078 lb, then the declared net weight shall be 2.07 lb).
For SI dimensions:
M = T x A x D/1000, where:
M = net mass in kilograms
T = nominal thickness in centimeters
A = nominal length in centimeters times nominal width [*NOTE 6*, page 122] in centimeters
D = density in grams per cubic centimeter as determined by ASTM Standard D1505 68, Standard Method of Test for Density of Plastics by the Density Gradient Technique (or latest issue)
For the purpose of this regulation, **when D is not labeled on the package, known,** the minimum density **(D) used to calculate the target net weight for linear low density polyethylene products (LLPD) and products other than high density (HDPE)** shall be 0.92 g/cm3 **(when D is not known). For products labeled High Density (HDPE) or similar wording which does not specify the minimum density (D) on the package label, the minimum density (D) used to calculate the target net weight shall be 0.95 g/cm³.**
For inch-pound dimensions:
W = T x A x 0.03613 x D, where:
W = net weight in pounds;
T = nominal thickness in inches;
A = nominal length in inches times nominal width [*NOTE 6*, page 122] in inches;
D = density in grams per cubic centimeter as determined by ASTM Standard D1505 68, Standard Method of Test for Density of Plastics by the Density Gradient Technique (or latest issue);
and 0.03613 is a factor for converting g/cm3 to lb/in3.
For the purpose of this regulation, the minimum density shall be 0.92 g/cm3.
(Added 1977) (Amended 1980, 1982, 1987, 1989, 1990, **and** 1993**, and 201X)**
NOTE 6: *The nominal width for bags in this calculation is twice the labeled width.*

The 2009 WWMA Association supports the following item and recommends that it be a Voting item:

2.13.4. Declaration of Weight. – The labeled statement …
For the purpose of this regulation, the minimum density shall be 0.92 g/cm³ (when D is not known).
For the purpose of this regulation, the minimum density shall be 0.92 g/cm³.
Amend Section 2.13.4. Declaration of Weight as follows:
For the purpose of this regulation, **when D is not known,** the minimum density **(D) used to calculate the target net weigh for linear low polyethylene products (LLDP) and products other than high density (HDPE)** shall be 0.92 g/cm³ (when D is not known)**. For products labeled "High Density," HDPE, or similar wording, the minimum density (D) used to calculate the target net weight shall be 0.95 g/cm³.**
The NEWMA L&R Committee reviewed this item at its 2009 Interim Meeting and recommends that this proposal be a Developing item.
At the 2010 NCWM Interim Meeting held in Nashville, Tennessee, the Committee heard support for the density factor changing from 0.92 g/cm³ to 0.95 g/cm³ on this item. A California county commissioner

indicated that the information provided by the WWMA was data extracted from Internet searches. Manufacturers are complaining that under current practice they cannot compete fairly.
Mr. Jackelen from Berry Plastics urged the Committee to reject this proposal. Mr. Jackelen stated that 0.92g/cm³ density currently works for manufacturers and that changing it to 0.95 g/cm³ will cause undue cost and waste. Most manufacturers do not make high density (HD) bags, but are producing blends. According to Mr. Jackelen, another reason to reject the proposal is if the 0.95 g/cm³ bag is punctured, it continues to tear.
A state official commented that if you use the term HD, then you are bound by the 0.95 g/cm³. If you use the length x width x thickness x density to determine the net weight, then the density value needs to be added on the package labeling. A state official said that manufacturers should consider disclosing the density factor on every product as part of the labeling. It was voiced that if there are questions about an absolute 0.95 g/cm³ density, then there should be an alternative.
Another state official commented that the 0.95 g/cm³ will be factored in only when the density is not known. The Committee received letters that were reviewed on this item. The Committee recommended moving the item under consideration forward as a Voting item.
At the 2010 NEWMA Annual Meeting in Groton, Connecticut, there was concern that there appears to be a lack of data on this item. It was never reviewed by all regions and also not presented to industry to seek comments. The NEWMA L&R Committee felt that this item was not an emergency and would like to review comments received from all the regions and industry.
At the 2010 CWMA Annual Meeting in Springfield, Illinois, the CWMA L&R Committee heard no comments on this item and recommends moving it forward as a Voting item.
At the 2010 NCWM National Meeting in St. Paul, Minnesota, the Committee heard from Mr. Jackelen (refer to Appendix B) who opposed this item and requested that it be Withdrawn. Mr. Jackelen believes this proposal will have a detrimental effect because can liners are made of natural gas and oil and the cost of these two items are increasing. Currently, the 0.92 g/cm³ is an established practice in industry and the marketplace and is used to set the bottom weight Changing this density will cause confusion. Mr. Jackelen clarified that high density (HD) does not mean it is a better density. There are other linear bags that have higher quality than HD. As far as sustainability, if 0.95 g/cm³ is the established requirement it will cause an additional 12 million pounds of trash to be generated
An official countered that the intent of this proposal is to provide the inspectors with information. There is fraud in the marketplace on these types of items and additional information is warranted. A director recommends that a minor amendment be done to the item under consideration and insert "for products labeled HD when the D is not on the package label use 0.95 g/cm³. Also use a similar statement "if the packer or manufacturer does not disclose the density then use 0.95 g/cm³." The director pointed out that it is not the role of the Conference to address quality issues, but to have a level playing field for inspectors to test a product. Another official remarked that companies need to identify their product on the container, and inspectors will use what density is disclosed.
The Committee received one letter asking for the withdrawal of this proposal and California submitted material safety data sheets from several companies (refer to Appendix B). The Committee considered comments received and agreed that more work was needed so the item was changed to Informational status.
At the 2010 CWMA Interim Meeting, there were no comments heard on this item. The CWMA L&R Committee recommends that this item remain Informational.
At the 2010 WWMA Annual Meeting, a state official commented that 10 companies have filed complaints concerning products being mislabeled, where the density was unknown. A state official submitted new language to replace a portion of language within the item under consideration. Two county officials spoke in support of the amended item, which would assist weights and measures officials in the field. A county official submitted a letter of support. The WWMA L&R Committee recommends that the amended language move forward as a Voting item.
The WWMA L&R Committee also recommends that additional language be inserted for SI dimensions.
Amend Section 2.13.4. Declaration of Weight as follows:
For the purpose of this regulation, **when D is not labeled on the package, known,** the minimum density **(D) used to calculate the target net weight for linear low density polyethylene products (LLPD) and products other than high density (HDPE)** shall be 0.92 g/cm3 **(when D is not known). For products labeled High Density (HDPE) or similar wording which does not specify the minimum density (D) on the package label, the minimum density (D) used to calculate the target net weight shall be 0.95 g/cm³.**

At the 2010 SWMA Annual Meeting held in Columbia, South Carolina, there were no comments heard on this item.
The SWMA L&R Committee would like to seek additional comments from industry, other than material safety data sheets (refer to Appendix A in this report). The SWMA L&R Committee recommends that this item move forward as an Informational item.
At the 2010 NEWMA Interim Meeting held in Norwich, Connecticut they noted that this proposal is confusing and that additional work needs to be done to clarify the impact of the proposed changes on manufacturers and consumers. The NEWMA L&R Committee recommends this move forward as a Developing item.
At the 2011 NCWM Interim Meeting held in Dallas, Texas, Mr. Mike Jackelen, Berry Plastics, stated this item as written will have a detrimental effect on the industry due to the high cost of plastics. Mr. Jackelen further explained that high density plastics are of higher quality but are of a thinner gauge which subjects it to tearing. A state regulator stated the WWMA recommended a change to the language for specifying that only when the density is not known or not labeled then the 0.95 g/cm^3 would apply.
The Committee agreed that adding a requirement which gives the manufacturer the option of providing the actual density of the plastic provides flexibility for industry and will assist weights and measures officials to ensure the accuracy of quantity declarations. The Committee recommends the revised language under consideration from the WWMA move forward as a Voting item.

Warfield, Lisa

From: Jackey Wong [jackey@wardleyfilm.net]
Sent: Monday, June 20, 2011 1:47 PM
To: jpg4@westchestergov.com
Cc: Warfield, Lisa
Subject: Plastic fim correction factor proposals
Attachments: scan0001.jpg; scan0002.jpg; scan0003.jpg

Good morning Mr. Gaccione,
This e-mail is to respond the new HDPE film weight conversion factor proposal.
Wardley Ind., Inc. is supporting this new push for a more up to date guide line on the Polyethylene film products and welcome to see a new platform, better environment for a more fair competition. However, their is very common to have a HDPE blending with lower density LLDPE materials to produce a film for better physical property. Therefore, the 0.950g/cm3 may not really represent the true density of HDPE film/bag products in a general situation. In fact, most of the popular film grade HDPE resin in the market is already offer lower than this 0.950g/cm3 figure to begin with.(Please see enclose spec. sheet for your reference). I would like to said the new propose factor is setting on 0.948g/cm3 or lower is much more close to real reality.
Please feel to contact me should you have any questions to this .

Jackey Wong
Wardley Ind., Inc.
907 Stokes Ave., Stockton, Ca 95215
Tel 209 932 1088 , Fax 209 932 0288
www.wardleyfilm.com

Technical Information

DOW HDPE DGDC-2100 NT 7
High Density Polyethylene Resin

Overview

- High Density Polyethylene (HDPE)
- Complies with:
  - U.S. FDA 21 CFR 177.1520 (c) 3.2a
  - Canadian HPFB No Objection
  - EU, 2002/72/EC
  - Consult the regulations for complete details.

DOW DGDC-2100 NT 7 High Density Polyethylene Resin is a high-molecular weight, high-density film grade resin. This product was specifically designed to offer an optimal balance of physical properties and processability. DGDC-2100 NT7 HDPE resin is ideally suited for use in making grocery sacks, consumer and institutional liners, and merchandise bags.

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density	0.948 g/cm³	0.948 g/cm³	ASTM D792
Melt Index			ASTM D1238
190°C/21.6 kg	9.0 g/10 min	9.0 g/10 min	
190°C/2.16 kg	0.070 g/10 min	0.070 g/10 min	
Films	**Nominal Value (English)**	**Nominal Value (SI)**	**Test Method**
Film Thickness - Tested	0.500 mil	12.7 µm	
Film Puncture Energy (0.500 mil (12.7 µm))	7.90 in·lb	0.893 J	Dow Method
Film Puncture Force (0.500 mil (12.7 µm))	6.70 lbf	29.8 N	Dow Method
Film Puncture Resistance			Dow Method
0.500 mil (12.7 µm)	128 ft·lb/in³	10.6 J/cm³	
Secant Modulus			ASTM D882
2% Secant, MD: 0.500 mil (12.7 µm)	140000 psi	966 MPa	
2% Secant, TD: 0.500 mil (12.7 µm)	159000 psi	1100 MPa	
Tensile Strength			ASTM D882
MD: Yield, 0.500 mil (12.7 µm)	6140 psi	42.4 MPa	
TD: Yield, 0.500 mil (12.7 µm)	4610 psi	31.8 MPa	
MD: Break, 0.500 mil (12.7 µm)	13600 psi	93.4 MPa	
TD: Break, 0.500 mil (12.7 µm)	9990 psi	68.8 MPa	
Tensile Elongation			ASTM D882
MD: Break, 0.500 mil (12.7 µm)	330 %	330 %	
TD: Break, 0.500 mil (12.7 µm)	410 %	410 %	
Dart Drop Impact (0.500 mil (12.7 µm))	350 g	350 g	ASTM D1709A
Elmendorf Tear Strength			ASTM D1922
MD: 0.500 mil (12.7 µm)	11 g	11 g	
TD: 0.500 mil (12.7 µm)	73 g	73 g	
Thermal	**Nominal Value (English)**	**Nominal Value (SI)**	**Test Method**
Melting Temperature (DSC)	504 °F	262 °C	Dow Method
Optical	**Nominal Value (English)**	**Nominal Value (SI)**	**Test Method**
Gloss (45°, 0.500 mil (12.7 µm))	9	9	ASTM D2457
Haze (0.500 mil (12.7 µm))	69 %	69 %	ASTM D1003

Extrusion	Nominal Value (English)	Nominal Value (SI)
Melt Temperature	410 °F	210 °C

Extrusion Notes

Fabrication Conditions For Blown Film:

- Screw Size: 1.97 in. (50mm); 24:1 L/D
- Melt Temperature: 410 °F (210 °C)
- Output: 8 lb/hr/in. of die circumference
- Die Diameter: 3.94 in. (100mm)
- Blow-Up Ratio: 4:1
- Neck Height: 32 in. (813 mm)

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L5005

High Density Polyethylene
HMW Film Grade
Melt Index 0.057 Density 0.949

Applications

ALATHON L5005 is a high molecular weight high density copolymer that provides broad bimodal molecular weight distribution, high stiffness and good heat seal response and strength. Typical applications include merchandise bags, grocery sacks, trash can liners, produce bags and roll stock.

Regulatory Status

L5005 meets the requirements of the Food and Drug Administration regulation 21 CFR 177.1520. This regulation allows the use of this olefin polymer in "...articles or components of articles intended for use in contact with food." Specific limitations or conditions of use may apply. Contact your Equistar sales representative for more information.

Processing Techniques

Specific recommendations for processing L5005 can only be made when the processing conditions, equipment and end use are known. For further suggestions please contact your Equistar sales representative.

Typical Properties

Property	Nominal Value	Units	ASTM Test Method
Melt Index	0.057	g/10 min	D 1238
Density	0.949	g/cc	D 1505
Total Energy Dart Drop	2.05	ft-lbs/mil	D 4272
Elmendorf Tear Strength, MD (TD)	14 (35)	g	D 1922
Tensile Strength @ Yield, MD (TD)	3,800 (3,400)	psi	D 882
Tensile Strength @ Break, MD (TD)	8,500 (5,000)	psi	D 822
Elongation @ Break, MD (TD)	300 (420)	%	D 882
Secant Modulus, MD (TD)	115,000 (140,000)	psi	D 882

Typical Process Condition Ranges:
BUR=3.5-4.5:1; Neck Height=6-9 Die Diameters; Die Gap (nominal), in.=0.040-0.050; Tower Height=Relatively Short; Output, Lb/Hr/In of Die Circumference=10-12; Melt Temperature - 390-420°F (199-216°C)

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2053/0503

Formolene® HDPE

Formosa Plastics®

Technical Data Sheet

Formolene E924

Melt Index – 0.04
Density – 0.949

High Molecular Weight High Density Polyethylene (HMW-HDPE) for Film Extrusion

Formolene E924 is a bi-modal HMW-HDPE resin designed for high dart impact strength and good processing characteristics. The resin is well balanced in overall physical properties and provides good stiffness for thin gauge film applications.

Formolene E924 meets all requirements of the U.S. Food and Drug Administration as specified in 21 CFR 177.1520, covering safe use of polyolefin articles intended for direct food contact.

Suggested Applications

T-Shirt Bags
Trash Can Liners
Industrial liners
Heavy Duty Bags

Nominal Physical Properties

PROPERTY**	TEST METHOD	UNIT	VALUE
Density	D1505	g/cc	0.949
Melt Index, Condition E,			
Condition E, 190°C/2.16 kg (MI)	D1238	g/10 min.	0.04
Condition F, 190°C/21.6 kg (HLMI)	D1238	g/10 min.	8.50
Melting Point	DSC	°C	131.0
Typical Film Properties			
Dart Impact	D1709	g/mil.	210
Elmendorf Tear Strength	D1922	g/mil.	14/25*
Tensile Strength at Break	D882	psi.	9,000/4,100*
Elongation	D746	%	300/410*

* MD / TD

Note: Film Properties based on 0.50 mil film produced in laboratory conditions at a Blow Up Ratio of 4.0 and a stalk height of 5X the die diameter. Actual film properties may vary depending on operating conditions and additive packages. Film properties are not intended to be used as specifications.

Published 08/04 Rev. 11/05

Any inquiries regarding this data sheet should be addressed to: 9 Peach Tree Hill Road • Livingston, NJ 07039 • Phone: (888) FPCUSA3 • Fax: (973) 716-7230

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Appendix C

Item 232-2: Handbook 130, Method of Sale of Regulation

Section 2.13.4. Declaration of Weight
Packaged Printer Ink and Toner Cartridges

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LEXMARK

Lexmark International, Inc.
740 West New Circle Road
Lexington, Kentucky 40550
USA

March 17, 2009

Mr. Max Gray
Department of Agriculture and Consumer Services
Bureau of Weights & Measures
3125 Connner Blvd. Lab 2
Tallahassee, FL 32399-1650

Dear Mr. Gray:

Thank you for providing the inquiry from cartridge refiller Dr. Ink, Inc., as well as the link to Tom Coleman's newsletter article dated March 2005. As we discussed briefly, Lexmark does not believe that the packaging for inkjet print cartridges is required to display the volume of ink contained within those devices. Lexmark also believes that despite some superficial appeal, such labeling is more apt to be misleading than illuminating to consumers.

Background

An inkjet print cartridge is not remotely similar to a bottle of milk or a tube of toothpaste; rather, it is one of the most technologically advanced micro-machines in commerce today. In fact, most of the sophisticated technology that comprised a printer in prior technologies is now contained within the print cartridge itself. Not surprisingly, then, the cost of the ink associated with a cartridge is a very small fraction of the total cost of the print cartridge mechanism and much of the price the customer pays for the cartridge is attributable to the micro-machinery, not the ink. Moreover, the capabilities of various cartridge models vary drastically in terms of print speed, print quality, drop size and resolution, and yield so a comparison of those machines based upon the quantity of ink they contain is an apples to oranges comparison. And as explained below, such a comparison could well mislead consumers into buying cartridges that will cost them more, not less, per print. Treating these sophisticated machines as though they were mere containers for ink is inappropriate.

Ink Exemption

Ink is expressly exempt from labeling as provided by the U.S. Fair Packaging and Labeling Act. See 16 C.F.R. 50.3.2(a), attached hereto. The exemption for ink has been consistently observed and applied for decades by the State of Florida, as well as every other state in the union. This is clearly demonstrated by the fact that during this period literally billions of ink pens, markers and highlighters have been sold without any labeling whatsoever as to the quantity of ink these devices contain. It cannot plausibly be denied that during the nearly 40 years the exemption has been in effect, enforcement officials of the Bureau have personally purchased a multitude of such

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products and cannot possibly have failed to notice that none of them disclosed the quantity of ink.[1]

Yet it does not appear that the Florida or any other state is currently considering requiring labeling of pens, markers and highlighters even though there is no principled way to treat them more leniently than print cartridges. Were the Bureau to abruptly change its longstanding policy regarding the ink, it would constitute a watershed change in Florida law that would encompass the entirety of two large industries that for decades have reasonably believed they were exempt. Any such unannounced deviation from established policy would create significant due process issues for the writing implement and printer companies affected.

Labeling Would Cause Confusion

As mentioned during our brief conversation, contrary to the objective of permitting meaningful comparisons of products, labeling ink volume of printing devices is more likely to cause confusion and in many cases, could cause consumers to make perfectly incorrect decisions. The ratio of the amount of ink contained in a cartridge versus the amount of printed pages a cartridge can produce is markedly different among various cartridge models. For example, a cartridge model that ejects relatively large drops of ink will consume far more ink to produce a given print than one with very fine drops and, ironically, the quality of the fine drop print will be better. Thus a consumer who chooses large-drop technology cartridge because it contains more ink than an equally priced fine-drop technology cartridge, will actually end up be paying more for each print, and obtain poorer print quality to boot.

In contrast, page yield estimates can provide a meaningful comparison of value to a consumer, at least if all manufacturers employ the same estimating assumptions and techniques. In this regard, the International Standards Organization (ISO), an independent, worldwide standard-setting body which is also interested in promoting accurate comparisons by consumers, has rejected reliance on ink volume or quantity. Instead, ISO, after studying for years the specific issue of inkjet cartridge performance and the consumer's need for meaningful comparative information, has developed a yield estimating and claiming methodology that permits cartridges to be compared using a consistent yardstick. Unlike ink volume measurements, these page yield measurements provide consumers a reliable way to compare the relative amount of printing that can be expected from competitive models of printers and their associated cartridges.

Coleman's Newsletter Article

Last, I would like to address Mr. Coleman's March 2005 newsletter article. To be honest, I am not entirely certain what this document is intended to be, but a non-regulatory agency employee's opinion set forth in a newsletter cannot possibly have the effect of countermanding the official Federal Trade Commission regulations that establish the exemption for ink. That regulation has the full force and effect of law and is recognized by all other states. Mr. Coleman's newsletter article simply is not an authoritative document that could formulate the basis for the sweeping regulatory change that Dr. Ink seeks.

[1] Inkjet print cartridges have similarly been sold for in every state at least 25 years.

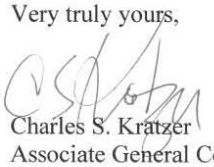
Moreover, Mr. Coleman's article does not address the ink exemption discussed above. Nor does it consider or discuss the lengthy and uniform custom and practice by the Federal government and every state government relating to ink products. It does not address the matter of whether billions of pens, markers and highlighters must, as a direct consequence of his position, must also be labeled. In this regard, there is not a single reason Mr. Coleman cites in support of his opinion that does not apply with equal force to the billions of pen, marker and highlighter packages that also do not display liquid volumes.

Although during our brief conversation you mentioned that the high cost of inkjet cartridges distinguishes them from pens, there is absolutely no provision in any packaging laws or regulations that exempts inexpensive items or provides a higher level of regulation for more highly priced items. If anything, pens, markers and highlighters are dramatically closer to being mere bottles of ink (like milk cartons) than the sophisticated micro-machines that comprise inkjet cartridges. There simply is no conscionable way for the Bureau to require the marking of high-tech ink delivery devices while permitting low-tech ink delivery devices such as pens and markers (which are purchased by more consumers and far more often) continue to be unmarked.

Conclusion

Lexmark very much hopes that based on the foregoing, the Bureau will deny Dr. Ink's request. However, if the Bureau is inclined to change its policy of nearly four decades upon which at least two huge industries have relied in good faith, Lexmark hereby requests that it do so only after giving Lexmark and all other members of the both affected industries notice and a formal opportunity to be heard regarding the complex set of regulatory and compliance issues presented by the change desired by Dr. Ink.

Very truly yours,



Charles S. Kratzer
Associate General Counsel

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16 CFR 503.2

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TITLE 16 -- COMMERCIAL PRACTICES
CHAPTER I -- FEDERAL TRADE COMMISSION
SUBCHAPTER E -- RULES, REGULATIONS, STATEMENT OF GENERAL POLICY OR INTERPRETATION AND EXEMPTIONS UNDER THE FAIR PACKAGING AND LABELING ACT
PART 503 -- STATEMENTS OF GENERAL POLICY OR INTERPRETATION

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16 CFR 503.2

§ 503.2 Status of specific items under the Fair Packaging and Labeling Act.

Recent questions submitted to the Commission concerning whether certain articles, products or commodities are included under the definition of the term "consumer commodity", as contained in section 10(a) of the Fair Packaging and Labeling Act, have been considered in the light of the Commission's interpretation of that term as set forth in § 503.5 of this part as follows:

(a) The Commission is of the opinion that the following commodities or classes of commodities are not "consumer commodities" within the meaning of the Act.

Antifreeze.

Artificial flowers and parts.

Automotive accessories.

Automotive chemical products.

Automotive replacement parts.

Bicycle tires and tubes.

Books.

Brushes (bristle, nylon, etc.).

Brooms and mops.

Cameras.

Chinaware.

Christmas light sets.

Cigarette lighters.

Clothespins (wooden, plastic).

Compacts and mirrors.

Diaries and calendars.

Flower seeds.

Footwear.

Garden tools.

Gift ties and tapes.

Glasses and glassware.

Gloves (work type).

Greeting cards.

Hand tools.

Handicraft and sewing thread.

Hardware.

Household cooking utensils.

Inks.

Jewelry.

Luggage.

Magnetic recording tape.

Metal pails.

Motor oil (automobile).

Mouse and rat traps.

Musical instruments.

Paintings and wall plaques.

Photo albums.

Pictures.

Plastic table cloths, plastic placement and plastic shelf paper.

Rubber gloves (household).

Safety flares.

Safety pins.

School supplies.

Sewing accessories.

Silverware, stainless steelware and pewterware.

Small arms ammunition.

Smoking pipes.

Souvenirs.

Sporting goods.

Toys.

Typewriter ribbons.

Woodenware.

(b) The Commission is of the opinion that the following commodities or classes of commodities are "consumer commodities" within the meaning of the Act:

Adhesives and sealants.

Aluminum foil cooking utensils.

(Position Provided by NIST WMD February 2005)

Due to the discussion of inkjet cartridges, over the NIST W&M list server, WMD has investigated this situation. WMD concludes that inkjet cartridges need a net quantity statement in liquid measure to comply with Handbook 130 requirements. Our analysis is below and further discussion is welcomed.

Inkjet and Printer Cartridge Considerations

The model weights and measures law contains several relevant sections that apply to ink cartridges.

Weights and Measures Law, Section 19. "Information Required on Packages:"
Except as otherwise provided in this Act or by regulations promulgated pursuant thereto, any package, whether a random package or a standard package, kept for the purpose of sale, or offered or exposed for sale, shall bear on the outside of the package a definite, plain, and conspicuous declaration of:

- the identity of the commodity in the package;
- the quantity of contents in terms of weight, measure, or count;
- the name and place of business of the manufacturer, packer, or distributor, in the case of any package kept, offered, or exposed for sale, or sold in any other place other than on the premises where packed.

Weights and Measures Law, Section 17. "Method of Sale:"
The method of sale shall provide accurate and adequate quantity information that permits the buyer to make price and quantity comparisons, except as provided by established trade custom and practice. While trade custom and practice is a consideration in some instances… the burden to provide "accurate quantity information" by means of a designated "method of sale" is the responsibility of the manufacturer.

Count alone does not fulfill this requirement.

A declaration of quantity in terms of count shall be combined with appropriate declarations of the weight, measure, and size of the individual units unless a declaration of count is fully informative.

Packaging and Labeling Regulation, Section 6.4. – "Terms:" If there exists a firmly established general consumer usage and trade custom with respect to the terms used in expressing a declaration of quantity of a particular commodity, such declaration of quantity may be expressed in its traditional terms, provided such traditional declaration gives accurate and adequate information as to the quantity of the commodity. Any net content statement that does not permit price and quantity comparisons is forbidden.

Weights and Measures Law, Section 15. – "Misrepresentation of Quantity:" No person shall represent the quantity in any manner calculated or tending to mislead or in any way deceive another person. If "accurate quantity information" is not provided, consumers are certainly being mislead or deceived and cannot possibly make price and quantity comparisons.

The Federal Trade Commission (FTC) has informed us that the following commodities (partial list only - similar products) are excluded from FTC jurisdiction.

Ink
Fountain Pens
Kindred Products (ball point pens, lead pencils, lead refills, etc.)
School Supplies
Stationery and Writing Supplies
Typewriter Ribbon
Printer Cartridges*

*While printer cartridges are not listed specifically in Handbook 130, FTC has indicated to NIST that commodities of this nature do not fall under their jurisdiction.

Metric "Only" Labeling:
Since the labeling of printer ink cartridges fall under state labeling regulations, dual unit labeling is not required. Hence, these packages may be labeled in only metric units.

Packaging and Labeling Regulation, Section 11.33. "Inch-Pound Units, Exceptions – Consumer Commodities:"
The requirements for statements of quantity in inch-pound units shall not apply to packages that bear appropriate International System of Units (SI). This exception does not apply to foods, drugs, or cosmetics or to packages subject to regulation by the FTC, meat and poultry products subject to the Federal Meat or Poultry Products Inspection Acts, and tobacco or tobacco products.

NIST Handbook 133, "Checking the Net Content of Packaged Goods," Fourth Edition, January 2005 – Product Testing:
NIST Handbook 133 has been prepared as a procedural guide for compliance testing of net content statements on packaged goods. The gravimetric test method (outlined in Chapter 2) uses weight measurement to determine the net quantity of contents of packaged goods. The handbook provides general test methods to determine the net quantity of contents of packages labeled in terms of weight and special test methods for packages labeled in terms of fluid measure or count. Gravimetric testing is the preferred method of test for products, such as inkjet and other types of printer cartridges. Therefore, the test method to verify the net contents of ink in printer cartridges exists. However, NIST recognizes the difficulties associated with determining the net content of these cartridges, such as, density determination, product cost, tare verification (cartridge), the cleaning of tare and standards, and finally, inspection lot size. Unless the products are checked at the plant or warehouse, it may be difficult to find a sufficient "retail" lot, adequate in size to obtain an appropriate sample.

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January 21, 2010

Attn: Mr. Don Onwiler, Executive Director
National Committee on Weights and Measures
1135- "M" Street, Ste. 110
Lincoln, NE 68508

Sent by E-mail: info@ncwm.net

Re: Citizen comment on
270-9 HB 130- Uniform Regulation for Method of Sale of Commodities—Packaged Ink and Toner Cartridges

Dear Mr. Onwiler:

On 01-19-10 I spoke with Ms. Lisa Warfield this morning and she directed me to certain print sources pertaining to the upcoming NCWM meetings, including the subject of Packaged Printer Ink and Toner Cartridges. Furthermore, she recommended I might speak with Mr. Ed Williams in Sacramento regarding these anecdotal experiences and observations.

I then spoke with Mr. Williams and he felt I should direct the following commentary to you for possible inclusion as citizen input in your upcoming committee meeting report.

I don't do this much and I have a propensity for HOT AIR…hope this isn't too bad.

_____

After having done my homework by reading Publication #15, Item 270-9, I shall first respond to certain comments made in Lexmark's Fox in the Henhouse letter to Mr. Max Gray, dated, March 17, 2009 supporting the current ISO-developed standard for Toner-Ink measurement methodology; then offer a personal experience to illustrate the current standard's shortcomings; then a few observations and unsolicited recommendations; and lastly, a closing comment on the need for furthering a new design paradigm and how your NCWM Conference can do something about it!

Item 1 -- It is irrelevant that the Ink/Toner component is a small part of the overall cost of a new or replacement cartridge—what matters is that the ink/Toner requires a costly and complex cartridge container for delivery. THEY ACT AS A UNIT! Lexmark's implication that the relatively low cost of the Ink/Toner alone renders proper regulatory scrutiny unnecessary <u>is totally spurious.</u>

In fact, the opposite is true—the Ink/Toner and Cartridge combination is an EXTREMELY EXPENSIVE Ink/Toner Delivery System because Content and Container <u>act as a unit</u> which, furthermore, is uniquely designed (with certain patent protection) to fit the corresponding printer model(s). Whether an OEM or lower-priced Name Brand cartridge, <u>the Unit is surprisingly expensive!</u>

Items 2, 3 --Re standards for Page Yield and current ISO solutions—"yield estimating and claiming methodology that permits cartridges to be compared using a <u>consistent yardstick</u>":

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My layman's opinion is that the "consistent yardstick" approach alone is inadequate. It prevents quantification of the contents—the essential ingredient inside the cartridge. Why not require the OEM Ink/Toner Cartridge/Printer industry to comply with freshly conceived DESIGN CRITERIA with at least one goal being to provide the consumer with a simple, yet accurate "back-up indicator" of a cartridge's actual toner content?

Personal observations:
The purpose of the foregoing recommendation would be to empower the consumer with a GUARANTEE for DELIVERY of the ENTIRETY of the purchased Ink/Toner.

This approach is meant only to supplement, not replace, the simpler, more convenient ISO-approved Page Count approach. The secondary consumer benefit would be to eliminate the "wiggle room"-based dealer responses to Ink/Toner shortage customer complaints as not many consumers are inclined to pry toner cartridges apart or properly argue issues of equity in the event of suspected shortages.

Whether by software revisions or hardware re-design, mandated new performance-based criteria can provide the consumer with a long-overdue checks-and-balances Tool to level the manufacturers' playing fields.

Solutions can take many forms—whether alpha-numerics via existing LCD windows or by color bar chart display graphics or even by adoption of primitive "clear plastic" toner cartridges. At the very least, the consumer would then have some kind of needed VERIFICATION TOOL.

Naturally, Lexmark's letter to Mr. Gray fails to address any constructive new solutions as none were previously required by any regulatory agency. To illustrate the need for the foregoing, consider my particular frustration which occurred because of the absence of a Verification Tool:

My personal experience (Haven't we all had them?):
The following sequence occurred in my design office. We purchase Brother or Staples TN-350 Toner Cartridges for my Brother MFC 7420 desktop laser printer (purchased several years ago), which has generally been lightly used (average 3-15 copies daily) since purchase:

EVENTS IN MY OFFICE:

- Periodically, the printer shuts down and will not print any longer…until a replacement Toner Cartridge is purchased and inserted into the printer!
  NOTE:
  - No easily noticeable, if any, Print Counter capability on the cartridge or the printer. The Toner Cartridge is a proverbial "Black Box".
  - Printer shutdown appears to occur SIGNIFICANTLY BEFORE the estimated 2500 pages of usage.
  - No warning whatsoever of the pending total shutdown , i.e. printing quality drop-off or fade-out.
  - All printed copies 100% perfect prior to shutdown.

- Printer LCD Display Message then appears, saying something like "Out of Toner" or "Replace Toner Cartridge"

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- Printer cannot be cajoled into operating again without a new replacement cartridge, i.e. pushing the rocker switch to OFF, waiting 30 seconds, then back to ON; rocking toner cartridge; sliding the corona wire; etc.

EVENTS FOLLOWING AT THE STORE:

- I take "suspect" cartridge to office supply dealer (where I purchased the printer, cartridges and all office supplies). A question and complaint is planned prior to purchasing a new replacement cartridge.
- The Store Manager recites the manufacturer's mantra about the difficulty of estimating toner consumption, varying printed text/page densities, etc.
- I then suggest we investigate the circumstances together—we remove End Cap from cartridge and….guess what….a SIGNIFICANT amount of toner spills out!
- The Store Manager then claims "Equipment Malfunction" may be responsible–did I purchase a Warranty? Ultimately, he reluctantly offered me a new replacement cartridge at half-price—but it was like pulling teeth from a donkey!.

EPILOGUE:
Was I satisfied? Yes and No

- Yes, because of the Manager's offer--I didn't feel like a total idiot.
- No, because of the repair disruption and the waste of my time.
- No, because of my uncertainty of a future repeat experience.
- No, because of the lack of final problem resolution—was the printer the real culprit or was it a batch of poorly designed Ink/Toner cartridges? Without the benefit of a built-in Diagnostic or Verification Tool(s)--either answer might be wrong. Will I, in the future, prematurely purchase again one or both of this manufacturer's products?

To avoid that risk of becoming a true idiot (the second time burn), will I switch manufacturers to avoid that possibility?

- Probably yes. What a shame, because otherwise, the printer offers excellent value!

Final Thoughts/Conclusions:
The cartridge Page Yield Estimate, purportedly reflecting quantity of content, provides inadequate consumer protection without at least one additional design feature (in mechanism or software) to deliver to, and assure, consumer of **full usage** of the cartridge's Ink/Toner contents.

Should not better Consumers Protection apply to the design of COMPLEX or PERMANENTLY SEALED CONTAINERS (i.e. Ink/Toner Cartridges)? These devices, during design, should trigger **design compliance with additional new standards and regulations,** generated by the appropriate agency, to assure the customer of:

1. Quantity of container's Contents
2. Delivery of Entirety of Contents, as is practical.
3. Provide consumer with a Print Count or Ink/Toner quantity verification tool, (on Cartridge or Printer Display Screen) as offered in larger printers.

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WHICH COMPARISON IS MORE APT?
Consider the comparison of a sophisticated, complex, injection-molded Ink/Toner Cartridge vs. an old-fashioned Burlap Bag for Grain or Paper Bag for Cement, where measurement can be easily confirmed because of the container's scale, flexibility and negligible weight --after all, it's just a BAG!

Now consider the same Toner Cartridge vs. a craftily-designed rigid Magician's Box with a false bottom (designed by the Magician or Manufacturer), which by accident or design, conceals a portion (i.e.30%) of the grain--which remains unused and ultimately is then unknowingly discarded by the Consumer. Is that right?

Throughout history, did not the science of measurements ultimately evolve in most every society so as to identify and prevent the proliferation of deceptive and/or irregular measurement practices (whether for government tax gain or for the public's protection)?

So Why Not Now?

EXAMPLE OFTHE NEW PARADIGM--REFILL THE REFILL:
The job of providing "replacement toner" could be done just as well with a Refill-the-Refill design. An affordable, small, lightweight, saltshaker-sized, two-ounce $3.00 Ink/Toner refill snap-on module or squeeze-dispenser bottle enabling a customer to conveniently refill an empty toner cartridge (purchased in $18.00 six-packs instead of buying one $50.00 traditional cartridge on six separate trip occasions). When do we "outlaw" UNAFFORDABLE, LARGE, HEAVY, PACKAGED, PALLETED and TRANSPORTED cartridges produced and sold in the usual way?

A side-by-side Energy Audit of the two approaches would indicate at least NINE BILLION DOLLARS OF WASTE and FAR MORE IN UNNECESSARY ENERGY COSTS in the ten billion dollars per year Ink/Toner Cartridge !ndustry. Did I read ten billion somewhere?

In closing, the Ink/Toner cartridge is only one of countless ethically-challenged manufactured products cluttering and consuming our environment. My experience, though very minor in the big scheme of things, again illustrates the range of social and environmental losses resulting from the current license manufacturers often have to legally harvest unearned profits and waste substantial energy in the process of producing these small-scale consumer products. The public suffers.

Respectfully,

Gary J. Neville

cc: Lisa Warfield,
Ed Williams



Information Technology Industry Council
Leading Policy for the Innovation Economy

Printer Toner and Ink Cartridges:

Best Practices for Conveying Yield Performance to the consumer

This paper has been prepared by the Information Technology Industry Council (ITI). ITI is the premier voice, advocate, and thought leader for the information and communications technology (ICT) industry. ITI is widely recognized as the tech industry's most effective advocacy organization in Washington D.C., and in various foreign capitals around the world. ITI's members include the leaders of printer manufacturing technologies including Epson, Hewlett Packard, Kodak, and Lexmark, among others.

Executive Summary:

The ultimate goal of any product measure is to provide information to a customer that facilitates an informed purchase decision. At first glance, comparing the volume or weight of ink or toner would seem to be a good proxy for the page yield. For a host of reasons this is often not the case. Toner and ink cartridges are complex mechanisms designed to deliver a consistent customer experience and because of this, ink or toner can be used in different amounts when printing and for purposes other than printing. All of this is highly dependent on the design of the larger printing system of which the cartridge is a critical but not independent part.

The printing industry realized the difficulty of presenting cartridge performance information to the customer and because of this voluntarily chose to develop several standards for measuring yield performance. These standards are developed specifically for these devices and use standard test patterns and methods to provide accurate and repeatable measurement. Moreover, the standards include protocols for clear and consistent communications to users regarding cartridge yields. The industry wholly believes that these test procedures provide a more reliable means of measurement and a more accurate method for consumers to determine value than comparing the volume or weight of ink or toner.

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Printer Toner and Ink Cartridges:

Best Practices for Conveying Yield Performance to the consumer

Objectives of weights and measures regulations include facilitating value comparisons and providing a standard of fairness in the marketplace. When it comes to selecting printer hardware and replacement supplies, these objectives dictate that weights and measures criteria that could lead the consumer to making economically incorrect decisions regarding value should not be implemented.

Some customers are interested in making comparisons on the relative value between printing supplies, both at the initial printer purchase and afterwards when purchasing additional supplies. In addition to cost, product reliability, brand reputation and print quality another important measure considered by some customers during the supply purchase is page yield. At first glance, comparing the volume or weight of ink or toner would seem to be a good proxy for the page yield. Unfortunately this is often not the case. This paper will outline the drawbacks of using weight or volume as a proxy for page yield and highlight the reasons why all major printer manufacturers use a set of ISO/IEC standards to measure and communicate printer yield.

Depending on the printing technology, the use of ink or toner can be impacted by several factors.

The amount of toner applied in printing pages compared to the amount of toner supplied in the cartridge is dependent on many factors and that a simple measure of the weight of the toner will not give a clear indication of ultimately how many pages can be printed. In electro-photographic (laser) printers, different toner formulations will use different amounts of toner when printing the same page. This is due to charge, particle size and formulation variation between toners. These attributes are engineered and varied by each cartridge vendor to provide what they feel to be the best experience to their customers. Some customers prefer thin sharp lines and fine detail, others prefer thick bold lines. Depending on the choices that a given manufacturer makes in toner formulation (base polymer, particle size, charge distribution and charge control agents), the amount of toner used to print the same page may vary. Additionally, the amount of toner cleaned and deposited in the waste hopper depends on several variables including the job size, coverage environment and printer design. Finally, the bulk densities of toners are not the same; for a given volume of toner, there can be significant differences in weights. All of these factors result in the reality that two different toner supplies of the same weight will not necessarily deliver the same number of pages.

Similar to laser printers, inkjet printer cartridge vendors manipulate several variables in their ink formulation to meet the needs they identify as important for their customers. Some of the variables that manufacturers consider and apply include: different ink formulations; dye vs. pigment inks, actual loads of pigment or dye in the ink formulation, and drop size. Different combinations of these ink content characteristics will result in substantially different ink consumption rates while printing the

same page. In addition, all inkjet systems perform routine servicing, and those servicing routines may be driven by a number of factors such as the ink formulation, usage and content. In addition, changes to non-ink materials by the inkjet cartridge manufactures or during remanufacture can affect the amount of ink that can be used in printing pages. Finally, for the same volume of ink, two different systems or the same model cartridge from two different vendors can print a different number of pages.

Ultimately what matters to many customers is answering the question, "How much can I print with a cartridge in a given printer?" Page yield reported using the ISO/IEC methodology better addresses this question than weight or volume. ISO/IEC JTC1 SC28 identified this as a consumer need in 2000 and started working on a family of standards that address this customer need. Standards now published measure yield for monochrome laser printers (ISO/IEC 19752), color laser and color inkjet printers (ISO/IEC 19798 & ISO/IEC 24711) using a common test suite (ISO/IEC 24712). Currently under development are standards to measure photo yield consisting of a methodology for inkjet printers (ISO/IEC 29102) and a photo test suite for any printing technology (ISO/IEC 29103). These standards are based on common design philosophies and change their methods slightly, depending on the technology being measured. The following attributes are endemic to each standard:

1. Use of a well defined consumer type document for printing – Coverage can vary depending on how it is measured and depending on what choices are made in defining coverage; the same "coverage" page can perform differently. For the ISO/IEC standards, the test pages were defined so that a consumer can more easily relate them to their work stream. These pages are freely available so customers can view and understand what the standard is based on. These test pages can be found at www.iso.org/jtc1/sc28.

2. Testing of multiple printers and cartridges to account for printer and supply variation – There is manufacturing variation not only with how much ink or toner is put in a supply, but how effectively a printing system uses that ink or toner. This usage is also impacted by the specific printer used during test; some printers of the same model will use more or less ink or toner. For this reason, the ISO/IEC standards require a minimum of three cartridges to be used on a minimum of three printers (minimum of 9 cartridges tested). The yield information from these 9 cartridges is reported using a lower 90% confidence bound (LCB) on the mean. This gives a reliable estimate of lowest predicted average yield with 95% statistical confidence. The LCB not only takes into account the average performance of the cartridges tested, but also the breadth of variation in the cartridges and printers tested. The goal is to try and characterize the end user experience taking into account some of the normal variations in printers and supplies.

3. A well controlled printing environment – The environment that a printing system operates in can have an impact on the number of pages printed for a given amount of ink or toner. For laser systems both temperature and humidity can impact the amount of toner used. For this reason both the temperature and humidity are controlled for toner yield testing. For inkjet,

temperature is the main environmental driver for ink usage, so only temperature is controlled during testing.

4. A well defined end of life criteria – For the purposes of the ISO standards, end of life is defined in one of two ways. First, when the printer stops printing and reports that the supply should be changed. The other method requires a visual assessment of elements on the test targets. This visual assessment is defined as a visually significant fade in the target elements greater than 3mm as compared to the 100th print for that cartridge. These two methods are meant to represent the two common criteria that users would choose to determine if a supply has to be changed.

When the publication of the first yield standard occurred in the summer of 2004 it was accepted by industry and consumer's groups as the best method for conveying one attribute of cartridge performance that was of interest to customers. Building on this acceptance, ISO/IEC JTC1 SC28 created additional standards for yield; these have been met with similar market acceptance as the original.

Because well established methods for the measure of cartridge yield exist and weight and volume are not as useful or meaningful in making value comparisons, this group recommends that cartridge performance information be conveyed to customers using the developed ISO/IEC yield standards.

Footnotes to press releases and reception of ISO yield standards:

http://www.pcmag.com/article2/0,2817,2183959,00.asp

http://www.hp.com/hpinfo/newsroom/press/2004/040617b.html

http://www.incits.org/press/2007/pr200701.pdf



August 10, 2010

Mr. Don Onwiler, Executive Director
National Committee on Weights and Measures
1135- "M" Street, Ste. 110
Lincoln, NE 68508

Via Email

Subject: NCWM Proposal for Uniform Regulation for Method of Sale of Commodities- Packaged Printer Ink and Copier Toner

Mr. Onwiler,

On behalf of the Information Technology Industry Council (ITI) and its members[1], I welcome the opportunity to offer these comments on the issue above for consideration at the 2010 National Conference on Weights and Measures (NCWM) Annual Meeting.

ITI agrees with the main objective of this proposal which is to provide consumers with a meaningful measurement of value. In this case, the most relevant measurement criterion for consumers is the number of pages that they can obtain from a given printer cartridge. The ISO/IEC standards for yield provide a common, well accepted basis for consumers to understand and compare different cartridge options.

However, ITI's members believe that volume and weight are a poor proxy for value. This measurement does not directly relate to the number of pages that a consumer can print from a cartridge and its use may lead consumers to draw incorrect conclusions regarding their choice of supplies.

[1] ITI is the premier voice, advocate, and thought leader for the information and communications technology (ICT) industry. ITI's members include the leaders of printer manufacturing technologies including Epson, Hewlett Packard, Kodak, and Lexmark, among others.

We continue to support the use of ISO/IEC yield measurement standards, which provide a clear, managed basis to measure and declare the yield of a specific cartridge. These standards rely on a test suite of pages relevant to consumer output that are freely available to consumers to review.

For color inkjet and laser printers, the industry supports yield declarations based on the normative testing described in ISO/IEC 24711 and ISO/IEC 19798. For monochrome laser printers, the industry supports yield declarations based on the normative testing described in ISO/IEC 19752. These three ISO/IEC measurement methods are widely accepted and are in practice by the industry. ITI would not encourage the use of any other value measurement as part of a mandatory or supplemental labeling requirement.

Thank you for your consideration of these comments. We recognize that this is a complex issue and look forward to continuing to work with the NCWM and with the working group being created under the L&R Committee. Please let me know if you have any questions or require further information.

Sincerely,



Josh Rosenberg
Director, Global Policy

cc:

John Gaccione
Chairman
Laws and Regulations Committee
National Committee on Weights and Measures

Lisa Warfield
NIST Technical Advisor
Laws and Regulations Committee
National Committee on Weights and Measures

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Information Technology Industry Council
Leading Policy for the Innovation Economy

August 10, 2011

Ms. Maureen Henzler
Chair, Task Group on Printer
Ink and Cartridges
<Via email>

Dear Ms. Henzler:

On behalf of the Information Technology Industry Council (ITI) and participating industry members, I would to like take this opportunity to share additional comments on the NCWM proposal before Laws & Regulations Committee's Task Group on Printer Ink and Toner Cartridges ("the TG"). We appreciate the opportunity to participate in the 96th Annual Meeting and to share our presentation with the TG concerning products, technologies, consumer value, and the ISO/IEC standards related to the proposal. We regret that there was insufficient time to provide our entire presentation, nor time for the TG to fully discuss the complex issues raised by the presentation. A copy of the presentation is attached along with additional comments that will both be submitted for inclusion in the NCWM Publication 16. We look forward to continuing to inform and support the TG's efforts.

The participating industry members viewed the TG session in Montana to be very productive. At the same time, it is clear that a great deal of work remains. To facilitate the process moving forward, we recommend that all interested parties reflect on the content shared to-date and frame questions, observations, and the like, to be shared with the group in advance of our next meeting. We would also suggest that it might be helpful for the Chair to circulate a "work plan" to identify all steps necessary to reach a satisfactory outcome for the TG process. This should be shared with all participants for feedback. A work plan might also help avoid any further misunderstanding or miscommunication concerning expectations of participants.

This miscommunication was evident at the TG meeting in Montana, when there were several comments indicating that a proposal was expected as part of industry's presentation. We were unaware that any of the TG participants were asked or expected to develop a proposal. To our knowledge, the only proposal pending comes from the Southern Weight and Measures Association and mandates the provision of weight and volume measurements on inkjet and toner cartridges. Our presentation in Montana addressed (as time allowed) questions circulated by the Chair to task group members at the 2011 Interim meeting and detailed the reasons for our opposition to this proposal. Our presentation also outlined the general reasons why we believe that the application of page yield based on relevant ISO/IEC standards might better achieve the current proposal's objective to clarify the labeling requirements for industry, consumers and weights and measures officials.

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It is our hope that a full discussion of the issues, including resolution of the many questions and concerns highlighted in the attached, will help the TG progress toward a resolution acceptable to all stakeholders. To that end, we make the following recommendations:

- **Poll all stakeholders to identify missing or incomplete information.** We have highlighted several items in the addendum to this letter. It would be helpful for state regulators and other TG members to identify any outstanding technical or other information that industry could begin working to develop and provide.

- **Provide further input on how best to communicate efficiently and effectively on these complex issues.** We appreciate the suggestion that industry representatives attend the upcoming NCWM regional meetings and hold further discussion on this issue. However, considering the early stage of our exploration of the issues involved and the need for additional guidance from the TG (as noted above), we question how effective it would be to attend such meetings at this time

- **Have the TG jointly develop a formal written request to the FTC seeking legal determination as to the scope of the "ink" exemption under the FPLA.** Resolution of how federal law applies to the labeling of cartridges is central to what, if any, action is considered by the NCWM.

- **Compile all consumer complaints submitted to weights and measures jurisdictions that would be helpful in determining the scope and nature of the problem being addressed by the proposal before the TG.** Such data will help the participating industry members to better understand the consumer complaints that brought this issue before NCWM and evaluate possible solutions.

- **Provide further detail of the intended end-point of this process.** Will a final report be submitted to the Laws & Regulations Committee? Will all stakeholders be able to review a draft report before it is finalized and sent to the L&R Committee? Is the goal to reach consensus? If not, or consensus is not reached, what is the goal? How have other working groups addressed these issues?

We appreciate the thoughtful dialogue advanced by the Task Group and look forward to your reply regarding the next steps in the process.

Sincerely,



Josh Rosenberg
Director, Global Policy



Addendum

Additional Considerations for the NCWM Task Group on Printer Ink and Cartridges

The Information Technology Industry Council (ITI) and participating industry members would like to submit the following comments to the NCWM Task Group on Printer Ink and Cartridges (hereafter, "TG".) This addendum to our August 10, 2011 letter to Ms. Maureen Henzler, Chair of the TG, highlights our views on several key issues, and identifies those that we believe warrant further work by the TG on the proposal currently before the group as an Informational Item.

FPLA Exemption

As mentioned in previous NCWM conferences, Participating Industry Members believe that the scope of the proposal conflicts with labeling exceptions established under the Fair Packaging and Labeling Act (FPLA).[1] Although the regulation does not specify the reason for the express exemptions adopted by the Federal Trade Commission (FTC), we believe the exemption is appropriate to apply to printer ink and toners and that this legal threshold issue must be directly addressed and resolved before the matter is taken up by the Laws & Regulations Committee.

Cartridge Technology Requires Special Consideration

The Participating Industry Members share the goals of NCWM as expressed in Handbook 130 (the Uniform Weights and Measures Law) to provide accurate and adequate information on packages "so that purchasers can make price and quantity comparisons." The wide spectrum of products and measures in Handbook 130 reflect the non-uniform nature of consumer products. In each instance, one should look to the nature of the product, use, and other variables to determine the method of sale that provides "accurate and adequate quantity information that permits the buyer to make price and quantity comparisons." (Uniform Law).

The value of a printer cartridge sold is determined by several inter-related factors. These sophisticated attributes in combination determine the quantity and quality of output from a cartridge. Establishing a method of sale for printer ink and toner cartridges must account for the unique attributes of how these products are purchased and used. These factors include: (1) use of software and hardware technologies that are found in the cartridge; (2) the physical attributes of the ink/toner that vary (e.g., quality of third-party refillers may differ, affecting the

1 16 C.F.R. §503.2.

value of a replacement cartridge); and, (3) the interplay between the cartridge and the printer. Put simply, the price/value comparison is only possible when the measure employed takes account of the interplay of these many factors. Based on common industry practice and consumer acceptability and use, yield is the only measure that allows for meaningful comparison. The value of a cartridge is measured by the printer's output. The filled cartridge has no value or utility standing alone.

Framing this issue in terms of weight or volume verification obscures the role of the physical cartridge and components in determining the value the customer receives. Checking the net quantity of commodities is a relatively straight-forward exercise for the inspector. The declared net quantity of contents of typical consumer commodities is the measured value by which consumers can make informed purchasing decisions. That is not the case for cartridges that dispense ink or toner as part of an integrated printer system. They are pieces of a complex sub-system used in a complex machine. It would be inaccurate to compare ink or toner as a commodity comparable to paper towels, as was suggested at the recent meeting. Paper towels are not an integrated, technology-driven system for an output, in contrast to printer cartridges that cannot be utilized without the necessary printer technology.

Contrary to typical consumer commodities where value is relative to package fill, increasing the contents of an ink cartridge does not necessarily drive a gain in value. Filling or refilling a cartridge to the maximum capacity, for example, can cause a host of issues that may jeopardize the operation of the cartridge and/or printer. Similarly, not all of the filled ink is used or accessible. Completely emptying a cartridge can damage the print-heads and other sensitive electronic components. These are just a few examples of why measurement of ink would not directly correlate to the value of the cartridge.

We appreciate that weights and measures officials routinely measure products to confirm stated quantities of net content. This function is vital to ensure equity and fairness in the marketplace, whereby consumers can make value comparisons among like products. In this technology-laden category, however, measurement of ink or toner content is not the best way to account for the true value of the product purchased. The value to the consumer (and the price paid) is not simply a measure of ink or toner quantity. The technology incorporated into the cartridge, and the "integration" between the cartridge and the printer, comprise an important value not reflected by the amount or volume of ink/toner in a cartridge. 2

Method of Sale by Weight or Volume is Misleading

The proposed regulation currently under consideration by NCWM requires manufacturers to mark net volume of ink or net weight of toner on cartridge packaging. During the TG meeting at

2 The Introduction to Handbook 130 notes among the purposes of the Uniform Laws and Regulations "to provide uniform and sufficient protection to all consumers in commercial weights and measures practices." When and how this authority is applied must involve careful consideration of the product and the manner of use.

the 2011 NCWM Annual Meeting, Industry Member Participants provided several illustrations of the potential issues with labeled net volume/net weight:

- The amount of ink or toner used by various printer models or brands can vary greatly due to the design features of the relevant printers. Printers often do not empty all material from cartridges due to various design and quality requirements.

- Differences in the designs of the cartridges intended for use with the same printer model or the condition (e.g., wear/tear) of the cartridges intended for use with the same printer model can affect the manner and amount of ink or toner used by the printer.

- The attributes of different inks/toners can cause the same printer to use ink or toner at different rates.

- The cost and value of the cartridge is not captured by a simple measurement of ink volume or toner weight.

Developing Appropriate, Validated Testing Methodology

Adopting a labeling requirement (as proposed to the Conference) whereby fluid ink is sold by volume (for each cartridge) or by net weight for toner would leave open a significant issue - - the development of an appropriate testing method by which an inspector would verify the declared net content. The Laws & Regulations Committee has confirmed the need for a test procedure for verification of net content developed for ink and toner cartridges, per the Publication 16 summary of the 2010 Interim Meeting held in Nashville. If the TG moves to advance the proposal for labeling for weight/volume, we would strongly support this L&R position.

The Industry Member Participants urge the TG to devote sufficient time to consider this issue. A reliable, validated method must accompany any new labeling requirement. Handbook 133, of course, is replete with reliable, validated methods for ensuring compliance with a statement of net quantity of contents. Cartridges are not simply containers, and the contents cannot be 'poured out and measured' like flour or rice. Some element of mechanical extraction is required, and manufacturers must know the method and how it applies to their products in order to make a clear and reliable net content declaration. To do otherwise would cause great uncertainty in implementation for Industry and highly inconsistent results for regulators.

The TG analysis of testing methodology should also take account of the following variables.

- There are hundreds of different cartridge models available from participating industry members, along with numerous other manufacturers and third-party suppliers.

- Every few years, a significant number of new printer hardware and cartridge models are introduced. These models reflect the natural evolution of technology to meet the ever-changing needs of home and office print users.

- Seemingly alike cartridges designed for a particular system can have designs that vary widely.

- Consistent extraction may require special tools or equipment, and efforts should be made to standardize those requirements.

- Inks and toners used by manufacturers vary greatly in chemical composition. The materials require safe and responsible handling, including disposal of unused contents.

These and other challenges may not be insurmountable, but nevertheless are formidable and must be addressed in considering the usability of a test method. Any verification testing would have to be appropriate and validated for hundreds of different cartridges. To that end, we have identified several questions that the TG might discuss at our next session: (1) what approaches has NCWM taken when faced with different product configurations and other unique characteristics that would affect (i.e., require modification) of an inspection method?; (2) how has NCWM adapted a single test method to diverse variations in the product's underlying technology?; (3) what type of equipment would be necessary to conduct an inspection to verify weight or volume of an ink or toner cartridge and how would such estimated cost compare with the purchase and maintenance of other test fixtures used by jurisdictions?; (4) how would the inspector handle safety and disposal issues?; (5) How would industry and regulators handle new product designs that are introduced that do not fit established measurement methodologies?; and (6) would destructive testing be required or is there information manufacturers/sellers could furnish to the inspector (e.g., cartridge tare weight)? We expect there are many other related questions as well.

Status of TG's Consideration of ISO/IEC Standards

Due to time constraints, the TG did not receive the planned briefing by industry about the ISO/IEC standards for determining page yield. The Industry Member Participants appreciate the TG's interest in the methodology, as it was identified as a primary area for discussion at the meeting in Montana. Page yield presents an effective, established and meaningful way for consumers to make value comparisons among ink and toner replacement cartridges. The

ISO/IEC methodology provides an internationally accepted means for verification of page-yield values.

Accordingly, we would recommend that appropriate time be allotted at the next TG session to allow for a complete presentation of this methodology and discussion on the merits and drawbacks of this approach. The "Addendum Sheets to the Interim Report" of the L&R Committee notes: "Concerns were expressed that the ISO/IEC test procedure for yield is not a practical method of testing." There was no explanation of these concerns nor were TG members able to respond. It is our understanding that the L&R Committee awaits a final report from the TG and that the question of ISO/IEC methodology and other key issues remain open to consideration.

We appreciate the perspective concerning this standard based approach and trust that the entire TG will have an opportunity to fully understand and discuss the merits and feasibility of this methodology. Further discussions will be particularly appropriate in conjunction with a discussion on development of a viable test method.

Making Appropriate Comparisons and Moving Forward

From our perspective, the TG dialogue would be enhanced by an explanation as to precisely how weight or volume serves the consumer's interest in making price and quantity comparisons among ink or toner cartridges. As explained, a cartridge's value is comprised of its hardware and software. The cartridge is not merely a receptacle that houses fungible ink that can be purchased and used for any printer. Furthermore, one cannot make reliable assessments as to price and quantity comparisons by examining the cartridge alone. The cartridge is a component of an integrated system (i.e., the printer). The amount of ink is immaterial as its value is only realized via the measured output from the printer (i.e., yield). We are unaware of instances where NCWM has regulated a component part of a complex system that is analogous to the ink or toner cartridge used in a printer. If such examples exist, it would be helpful if they were brought before the TG for discussion. As briefly raised at the last TG session, a battery provides an apt illustration of a consumer product that is appropriately sold by count, the value of which is not captured by a statement of the electric charge held.

Cartridges are comparable to batteries in several important respects. First, the consumer buys the battery technology together with the available energy. In the case of a single use battery, the amount of charge is not labeled. Beyond count, the label identifies the type of battery which enables the consumer to select the appropriate size for the electronic product for which the battery will be used. For a rechargeable battery, its compatibility with identified electronic products is the pertinent information, not the amount of energy used to recharge the battery. Similarly, the content of an ink or toner cartridge is not the primary information by which consumers assess value.

Second, the content of the energy within the receptacle (the battery casing) is not accessible to the consumer. The content of the battery has no utility or value apart from its use or integration into the unit that requires the charge from the battery to produce the desired output of the system as a whole. NCWM does not require that the amount of electrical energy stored in a battery be declared on the label, nor has the conference adopted a method for measuring the amount of energy that can be used from the battery. Weights and measures inspectors have one simple way to verify the content of packaged batteries - - by count.

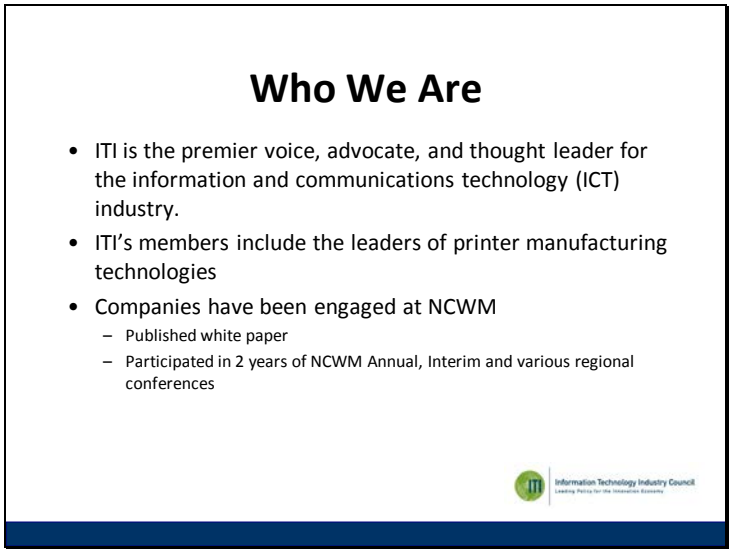
It is conceivable that one could develop a method for verifying the amount of electrical energy stored in a battery. However, the value of providing this labeling information is dubious as the useful output of the battery will depend on its use. The endless possible uses of the batteries would make labeling and verification of a consumer battery complex, expensive, and ultimately of little value to consumers who can make value comparisons based on count and their own experience with the battery based on the particular use for which the battery is purchased. Ink and toner cartridges are similar. No reliable method can account or verify the ink content, nor would such information be useful to consumers. It is the intrinsic nature of batteries and ink cartridges (as part of a complex product) that explain why a statement of weight or volume is unnecessary and impractical. Taking into account all of the above complexities, costs, and challenges associated with sale by weight or volume, "count" appears to be the only manageable and accurate means by which to label the net content of ink and toner cartridges.

It is our hope that these additional considerations will help advance the TG dialogue to find a solution that meets the objectives of the proposal before the Group and is acceptable to all stakeholders.

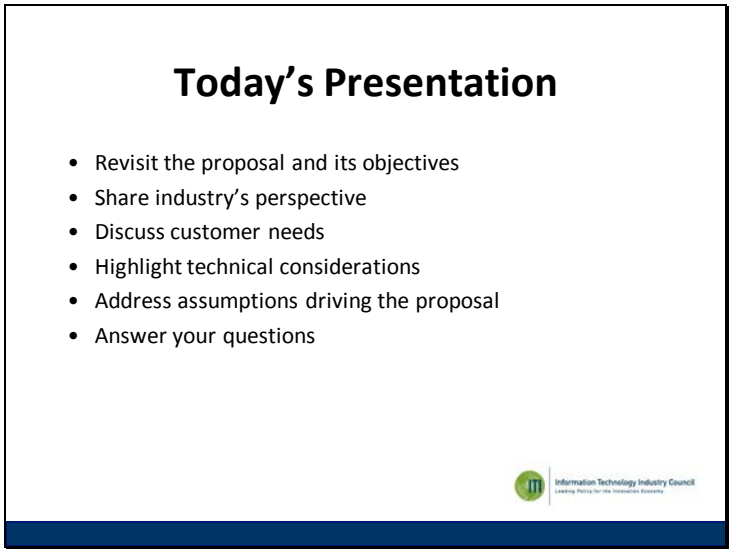
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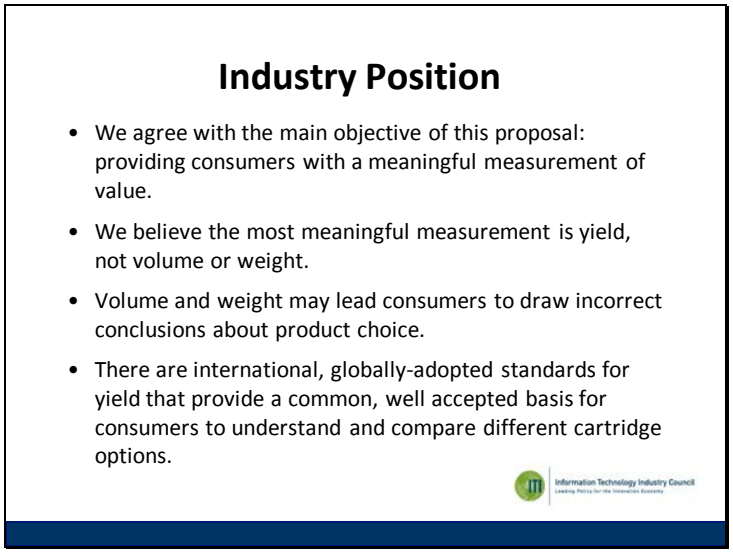
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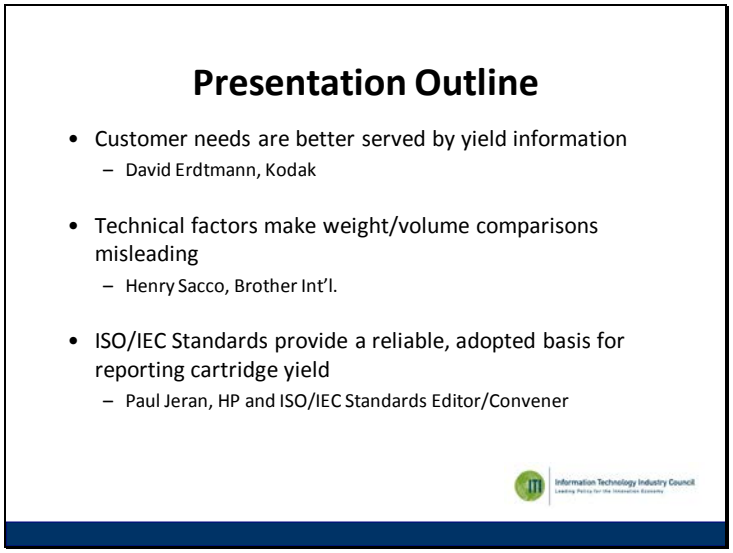
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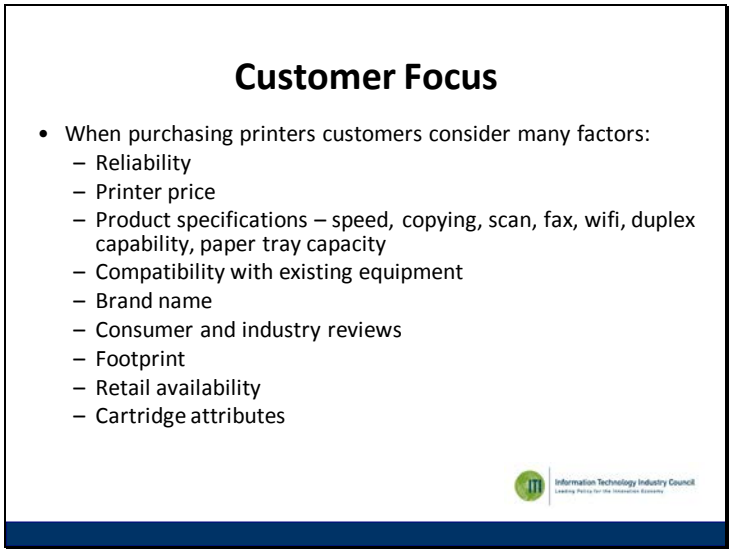
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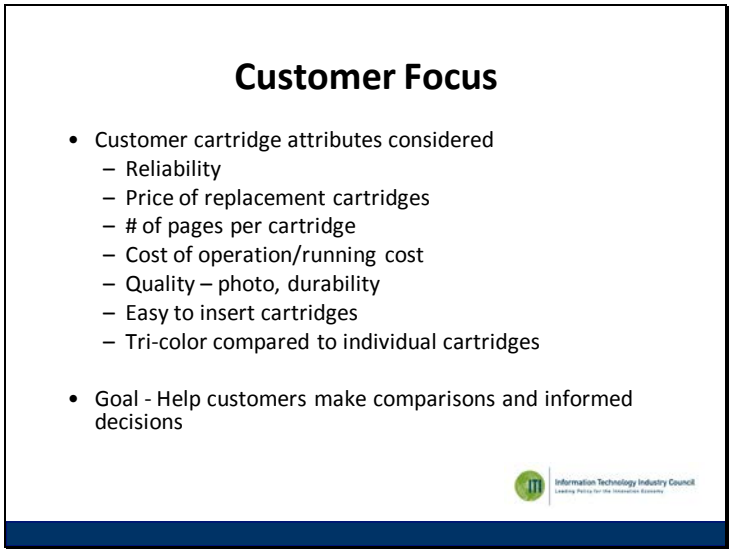
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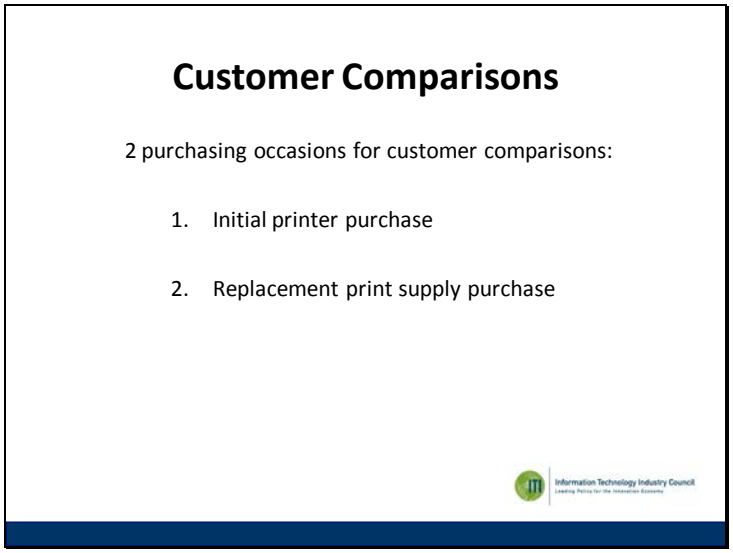
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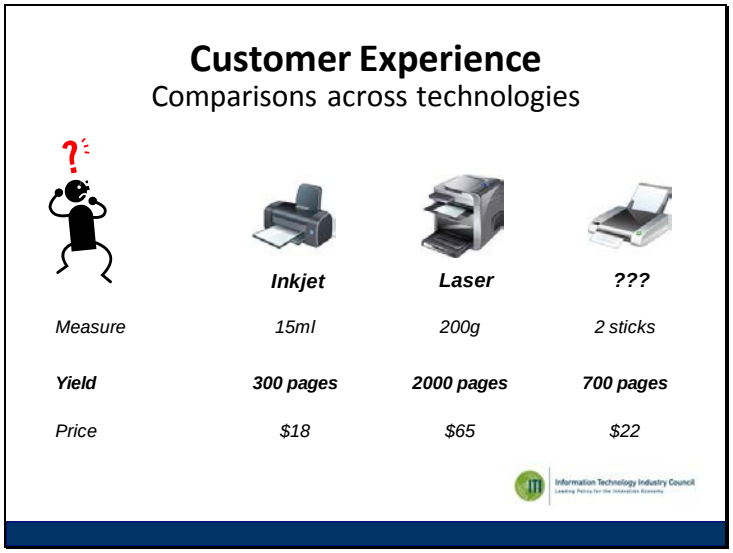
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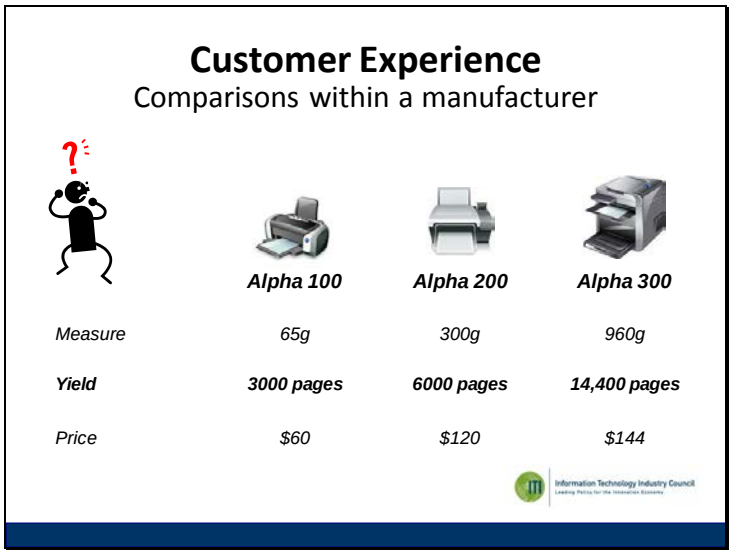
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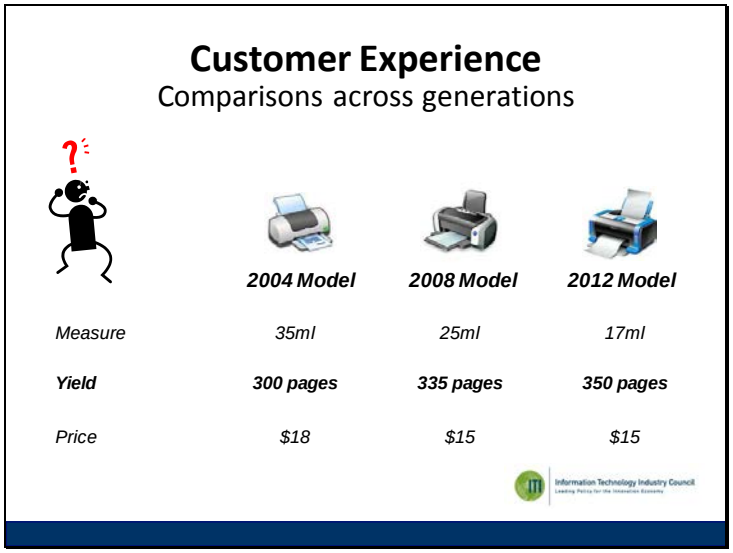
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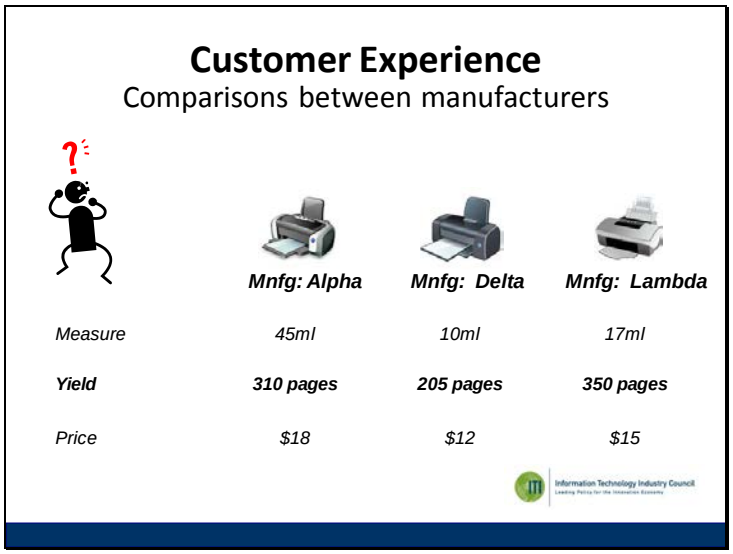
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Customer Experience

Comparisons across cartridge suppliers





Standard Black



XL Black

Measure	*4ml*	*6ml*
Yield	***200 pages***	***600 pages***
Price	*$15*	*$30*

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Technical Factors

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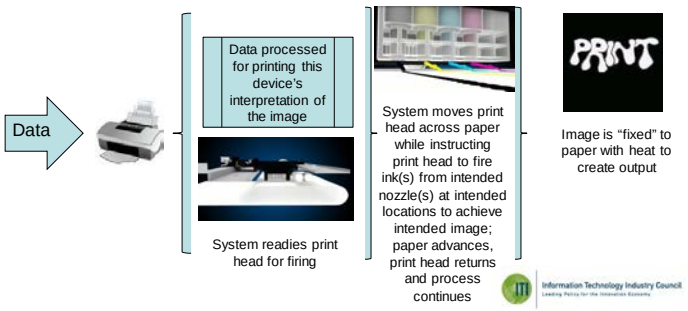
Technical Factors

- In order to understand what information is important to the consumer and necessary to make price and quantity comparisons, there needs to be an understanding of the various printing technologies.
- The following technical discussion also highlight the challenges and drawbacks of requiring volume and weight declarations on ink and toner packages.

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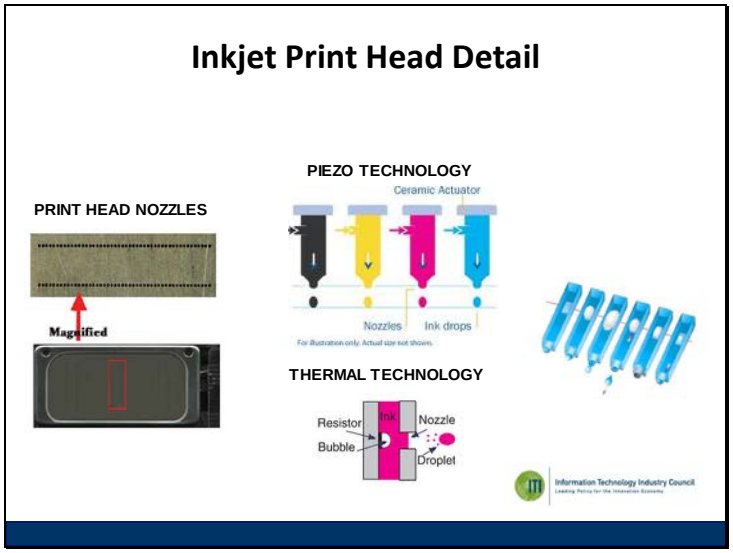
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How does the Inkjet Printer process work (Simplified Operation of an Inkjet Printer)

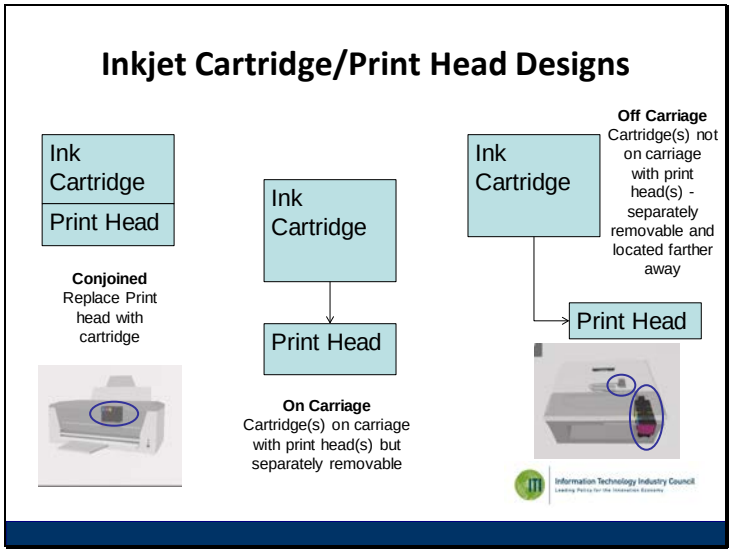


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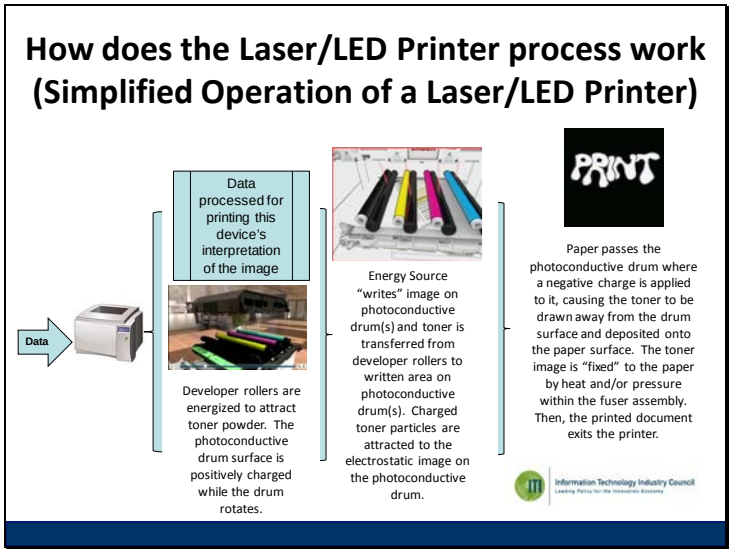
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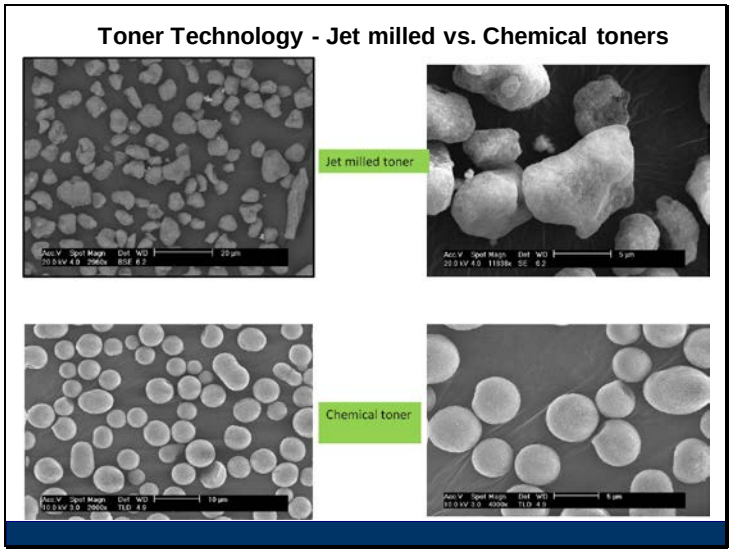
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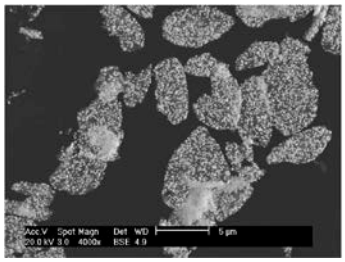


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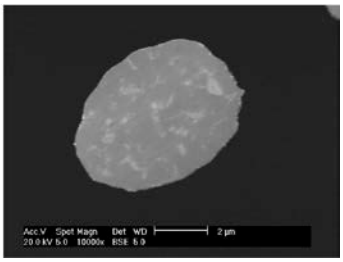
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Toner Density



This is a x-section of the monochrome toner. The white specks within the toner particles are Iron oxide particles which accounts for 49-50% of the weight of toner.

The density of this toner is approximately 1.4-1.5 g/cc.



This is a x-section of a black color CPT toner. The color toners does not contain Iron oxide and is primarily 98-99% polymer.

The density of this toner is approximately .98-1.0 gm/cc.

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Customer experience based on density impact on yield

- Potential fill volume of 200cc (volume constant)
  - Chemical toner = 100g = 8.0K ISO Pages
  - Jet milled toner = 133g = 2.7K ISO Pages
- Potential fill of 200g (weight constant)
  - Chemical toner = 8.0K Pages
  - Jet milled toner = 4.0K Pages

Weight or volume measure of toner can mislead to actual delivered value

Based on:
- 40 pages/gram for chemical
- 20 pages/gram for jet-milled

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Technical Challenges with Toner

- Different toners have different density
- Different toners have different pages/gram efficiency

Grams	Pages	pages/gram	
440	10560	24.0	Most likely Jet Milled
300	4800	16.0	
340	7200	21.2	
300	8400	28.0	
1050	21600	20.6	
690	14400	20.9	
1140	45600	40.0	Most likely Chemical
65	3000	46.2	

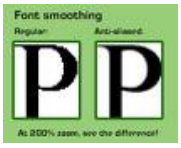
Based on several web site reports
http://www.uninetimaging.com/downloads/technical/TecArtWebAdded/Canon_LBP_EX_EP_E_Toner_Summit_Web.pdf
http://www.collectingcanada.com/ibm_4019_29.pdf
http://ezinearticles.com/?How-To-Properly-Remanufacture-Your-HP-Q1338A-Q1339A-Black-Toner-Cartridge-In-Just-53-Easy-Steps&id=106439
http://www.priceless-inkjet.com/cartridge/RI_887640.html
http://www.iwt.kiev.ua/files/samsungml-1210.pdf

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Inkjet and Laser/LED Technologies

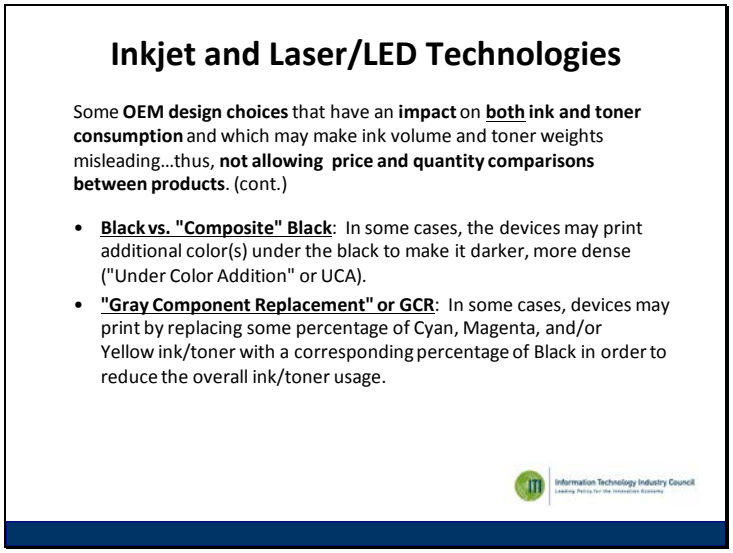
Some **OEM design choices** that have an **impact** on **both ink and toner consumption** and which may make ink volume and toner weights misleading…thus, **not allowing price and quantity comparisons between products**.



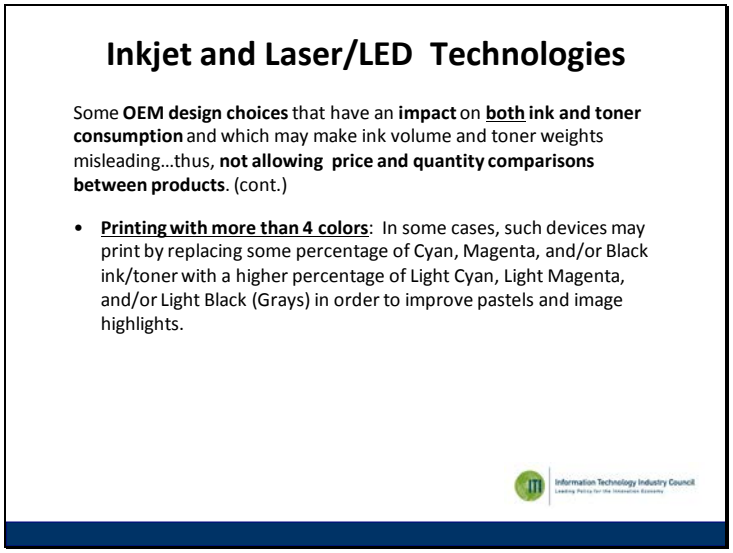
- **"Anti-Aliasing" or "Smoothing"**: Techniques for smoothing the edge of the printed image. Depending upon the OEM device design, more or less ink/toner may be used in this "smoothing" process.
- **"Color Mixing"**: Techniques used for mixing colors can impact ink/toner consumption – richer colors probably means more ink/toner. Certain OEM devices may mix colors differently based on the type and concentration of the ink/toner.

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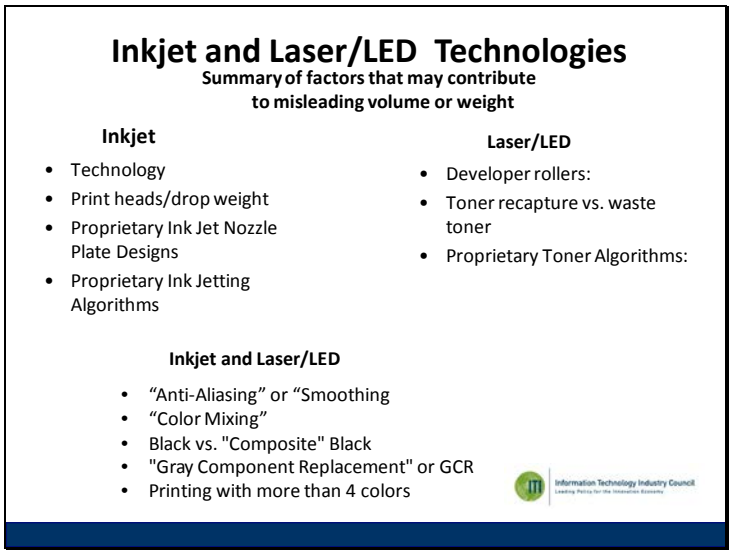
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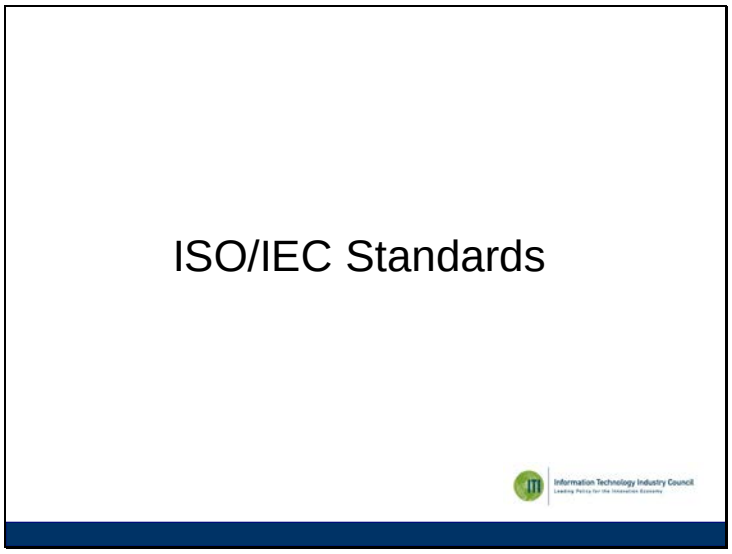
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Meeting a Need: Developing an ISO Standard

- Prior to the development of a standard for yield, each manufacturer advertised their cartridges' delivered value using various methods
  - proprietary yield measures
  - weight or volume
  - nothing
- There was no way for customers to assess the relative value of cartridges between printers or even for the same printer.
- ISO was developed to provide that measure.
- Has been adopted world wide as the best measure available for reporting delivered cartridge value

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What the yield standard is and is not

- Well defined method to measure and report the yield of a set of cartridges in a printing system
- Takes into account variation in printer and cartridges
- Carefully controls, environment test files and end of life
- Tests cartridges using a user-like page and end-of-life
- It is NOT a guarantee of a specific cartridge's yield performance

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In Summary

- Dean Gallea, Head of Computer Testing at Consumer Reports

  "…manufacturers should focus on the number of pages you can print rather than how much ink each cartridge contains… the number of pages that you get per unit volume of ink can vary between the different ink formulations and different manufacturers, so its not a clear indication of what the page count would be."

Jan 22, 2010, on Marketplace, National Public Radio

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In Summary

- Based on the goals of NCWM (and those in Handbook 130), weight and volume will not meet the objective, but quantity and yield will.
- Industry has already begun transitioning to use of the ISO/IEC standards.
- These standards are a better measure than weight/volume for consumer information and product comparison.

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Thank You
ITI Contact:
Josh Rosenberg
jrosenberg@itic.org
(202)626-5738
Information Technology Industry Council

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Appendix D

Item 232-3: Handbook 130, Method of Sale Regulation

Section 1.7.1. Factory Packaged Ice Cream and Similar Frozen Products

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
College Park, MD 20740

AUG 0 2 2010

Cary Frye
Vice President
Regulatory Affairs
International Dairy Foods Association
Milk Industry Foundation
National Cheese Institute
International Ice Cream Association
1250 H Street NW, Suite 900
Washington, DC 20005

Dear Ms. Frye:

This is in response to your April 2 and May 14, 2010 letters to the Food and Drug Administration (FDA) seeking FDA's position on the appropriate net quantity of contents declarations for pelletized frozen desserts, other than ice creams. You requested FDA's confirmation on its position prior to the National Conference on Weights and Measures meeting to be held on July 11, 2010 so that the regulations on the method of sale may be appropriately amended at this meeting.

You stated in your letter that FDA clarified its position in the April 17, 2009 letter to the International Ice Cream Association (IICA) that net quantity of contents statements for pelletized ice creams should be expressed in terms of weight, not volume. You also stated that IICA believes that it is reasonable to assume that the same rationale that led FDA to this determination would support a position that labels of other pelletized frozen desserts should also include declarations expressed in terms of weight.

In a letter dated April 17, 2009 to IICA, FDA concluded that pelletized ice cream is a unique and totally new ice cream product that has emerged in the market place and because it is a semisolid food, and in accordance with 21 CFR 101.105(a), the net quantity of content declaration for this type of product would be net weight. In addition, FDA concluded that since there is not a firmly established general consumer usage and trade custom of expressing the quantity of contents declaration in terms of volume on pelletized ice cream, net weight would be appropriate.

Like pelletized ice cream, other similar pelletized frozen desserts are unique and new frozen desserts that are emerging in the marketplace. Because they are semisolid foods, in accordance with 21 CFR 101.105(a), and consistent with the net quantity for pelletized ice cream, the appropriate net quantity of content declaration for these products would be net weight. In addition, there is not a firmly established general consumer usage and trade custom of expressing the quantity of contents declaration in terms of volume on other similar pelletized frozen desserts.

As you stated, pelletized frozen desserts are manufactured at very low temperatures using a nitrogen process and consists of thousands of small beads of water ice, sherbet or other frozen desserts of varying sizes that are quick frozen. Moreover, because there is variation in the diameter of the pieces, settling in the package, and the absence of a test procedure, FDA believes that a net quantity of content declaration using a volume measurement would be difficult for manufacturers to determine and confirm and for regulatory officials to test.

FDA believes that a net weight approach would eliminate the need to develop a new test procedure that could be time consuming and require expensive test equipment. It appears that because of the uniqueness of these products, a net weight declaration would be an easier measurement to test than a volume declaration. Therefore, FDA believes that the net quantity of content statement on pelletized frozen desserts, in addition to pelletized ice cream, that conform to the standards for frozen desserts in 21 CFR part 135 and nonstandardized frozen desserts that are similar to the standardized frozen desserts in 21 CFR part 135 should be declared in terms of net weight. We would expect manufacturers of these pelletized frozen desserts to revise their labels to reflect a net weight declaration during the next printing cycle and encourage all marketers of pelletized frozen desserts to modify their labels with a net weight declaration within one year from the issue date of this letter.

If you have additional questions, do not hesitate to contact us.

Sincerely yours,

Felicia B. Billingsley
for

Geraldine A. June
Supervisor
Product Evaluation and Labeling Team
Office of Nutrition, Labeling,
and Dietary Supplements
Center for Food Safety
and Applied Nutrition

Appendix E

Handbook 130, Item 237-3: Engine Fuels and Automotive Lubricants Regulation

Section 3.15. Biodiesel and Biodiesel Blends

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NATSO ..... L&R - E14
Petroleum Marketers Association of America (PMAA) ..... L&R - E16

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API

Brian Knapp

Marketing Policy Advisor, Downstream

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Fax 202-682-8051
Email knappb@api.org
www.api.org

September 7, 2010

Fuels and Lubricants Subcommittee
c/o Ronald G. Hayes, Chairman
National Conference on Weights and Measures PO Box 630
1616 Missouri Boulevard
Jefferson City, MO 65102

Re: Publication 16: 237-3 — Engine Fuels and Automotive Lubricants Regulation, Section 3.15 Biodiesel and Biodiesel Blends

Dear Fuels and Lubricants Subcommittee:

I write today to clarify and expand on comments made in a January 20, 2010 email to the FLS regarding changes to Handbook 130 Section 3.15 Biodiesel and Biodiesel Blends. The comments also reflect and expand upon API positions that were orally presented during the July 2010 NCWM Annual Meeting.

API Position

API agrees with NCWM that consumers must be protected from unknowingly purchasing diesel fuel containing greater than 5 percent biodiesel by volume. However, API opposes requirements on fuel suppliers to determine and convey the exact percentage of biodiesel in ASTM D975 diesel fuel. API supports with caveat the amended proposal included on L&R 24 in Publication 16 and opposes the draft substitute on L&R 25 in Publication 16. API would like to see the amended proposal on L&R 24 in Publication 16 further amended to say,

> 3.15.3. *Documentation Required on Transfer Documents. The retailer shall be provided, at the time of delivery of the fuel, a declaration of the volume percent biodiesel on an invoice, bill of lading, shipping paper, or other document. It is the responsibility of any potential blender to determine the amount of biodiesel in the diesel fuel prior to blending.*
>
> *3.15.4. Exemption.*
> *(c) Diesel fuel containing not more than 5% by volume biodiesel fuel is exempt from disclosing the actual percent by volume of biodiesel as required in Section 3.15.3. However, the term "May contain up to 5% biodiesel" shall be used.*

API offers the following arguments in support of our request that NCWM not require fuel producers and suppliers to provide the percent biodiesel by volume in D975 diesel fuel to retailers:

percent biodiesel by volume and up to 20 percent biodiesel by volume, then the fuel is to comply with ASTM D7467, Standard Specification for Diesel Fuel Oil, Biodiesel Blend (B6 to B20).

- Blenders of biodiesel should be responsible for confirming the biodiesel content of the finished fuel and that the fuel complies with the appropriate ASTM specification.
- 16 CFR 306 - Automotive Fuel Ratings, Certification and Posting - explicitly states that "biodiesel blends and biomass-based diesel blends that contain less than or equal to 5 percent biodiesel by volume and less than or equal to 5 percent biomass-based diesel by volume, and that meet American Society for Testing and Materials ('ASTM') standard D975 ('Standard Specification of Diesel Fuel Oils') are not automotive fuels covered by the requirements of [16 CFR 306]."
- If a party desires tax and/or RIN credits for blending biodiesel, then they should be responsible for determining the biodiesel content of the fuel that they are blending.
- Due to the nature of how fuels are delivered to terminals, it is unrealistic to expect terminal operators to provide exact biodiesel content of each transport of fuel being transferred.
- The requirement to disclose the exact biodiesel content on all transfer documents places an undue burden on the distribution system and does not allow for the flexibility needed by the operators of these systems.

Quality Assurance

Product integrity and quality assurance are essential for API member companies to ensure customer satisfaction. API members assure consumers that branded diesel containing up to 5 percent biodiesel by volume sold from their retail stations meets the ASTM D975 specification as required by law. If a party, who is authorized to do so, chooses to materially change the properties of the fuel offered by suppliers by adding biodiesel downstream of their fuel receipt from their supplier, it is the responsibility of that party to ensure that every gallon of the biodiesel blend offered to consumers meets the ASTM D975 specification and/or is in compliance with federal, state and local laws and regulations.

Requiring suppliers to determine the specific volume percentage of biodiesel in the fuel they offer to marketers who wish to then alter the fuel places an unreasonable burden on suppliers. If marketers wish to blend biodiesel into fuel, they should be the responsible party for determining the biodiesel content of the fuel.

Federal Trade Commission Regulation

16 CFR 306 - Automotive Fuel Ratings, Certification and Posting - explicitly states that "biodiesel blends and biomass-based diesel blends that contain less than or equal to 5 percent biodiesel by volume and less than or equal to 5 percent biomass-based diesel by volume, and that meet American Society for Testing and Materials ('ASTM') standard D975 ('Standard Specification of Diesel Fuel Oils') are not automotive fuels covered by the requirements of [16 CFR 306]." Therefore, refiners, importers and producers are not required to "determine" automotive fuel ratings for D975 diesel fuel before they transfer it. Additionally, refiners, importers and producers are not required to "certify" the automotive fuel rating for D975 diesel fuel for each transfer. The automotive fuel rating for diesel fuel containing over 5 volume percent is the biodiesel content.

Additionally, 16 CFR 306.4 states that, "no State or any political subdivision thereof may adopt or continue in effect...any provision of law or regulation with respect to such act or omission, unless such provision of such law or regulation is the same as the applicable provision of this title." In other words, the FTC regulation preempts state laws that are not the "same" as FTC rules. Thus, any NCWM efforts to require the determination and/or certification of the automotive fuel ratings for D975 diesel fuel would be advancing efforts that would be in violation of 16 CFR 306.4.

Tax Benefits

Some supporters of requiring that the percent biodiesel by volume in D975 diesel fuel be included on transfer documents cite tax benefits that are allowed to blenders based on the amount of biodiesel per gallon of diesel. These same supporters also cite the Renewable Identification Number (RIN) credit retailers can receive for blending biodiesel downstream of the supplier. These benefits that encourage biodiesel blending reward the party performing the blending, which API supports. However, it should not be the responsibility of a third party, namely fuel suppliers, to aid a downstream blender's assessment of their tax benefit without compensation; nor should it be that third party's responsibility to assure the quality of the final product made in the interests of receiving that credit. This is an undue burden and by no means equitable treatment.

Implementation Concerns

Adequate timing to test and determine the percent biodiesel by volume is an issue that may hinder implementation of a requirement to certify exact biodiesel content for D975 diesel fuel. Some terminals do not necessarily know that their D975 diesel fuel receipt contains up to 5 percent biodiesel because all D975 diesel fuel containing up to 5 percent biodiesel by volume is fungible product and thus may be mixed with other D975 diesel fuel without the need to retest for quality. In some terminals, fungible D975 diesel fuel containing up to 5 percent biodiesel by volume can enter a terminal without the terminal operator's knowledge because it warrants no attention.

D975 diesel fuel, with up to 5 percent biodiesel by volume, may be placed in the same storage tanks as other D975 diesel fuel shipments potentially creating an amalgamation of D975 diesel fuel with differing amounts of biodiesel concentrations. To be clear, this would never result in a D975 diesel fuel surpassing 5 percent by volume in the storage tank. Should the terminal operator be aware of the biodiesel content, the shipment would still be placed in storage with other fungible D975 diesel fuel for efficient use of available storage tank capacity, rather than devoting an existing tank to the D975 diesel fuel with known biodiesel content or constructing a new tank for this purpose. Terminal tank space is currently at a premium, and any efforts to require additional tank space will be opposed by API members. Terminal operators do not have spare capacity to devote to different blends of fungible product nor the acreage to build new tanks. In short, because they optimize their use of existing storage tanks consistent with ASTM standards and Federal code, terminal operators, with the exception of those in jurisdictions with regulations requiring a specific biodiesel volume percentage in the diesel fuel offered, do not know the precise biodiesel content of D975 diesel fuel offered.

There are two ways a terminal operator could determine the biodiesel content of D975 diesel fuel before sale; both of which are costly and time-consuming. The method of greatest burden and cost involves testing the D975 diesel fuel in storage after each delivery to obtain an up-to-date accounting of the biodiesel content. The density of D975 diesel will vary between different fuel deliveries and will often leave different strata of D975 diesel fuel blends within the tank. A stratified tank means that a

terminal operator would not able to determine the biodiesel content of a tank by performing a simple weighted average calculation. Physical testing would be required to determine the specific biodiesel concentration at substantial burden and cost to the terminal operator. Further, the frequency with which some terminals receive deliveries of diesel fuel could require testing more than once daily.

Some tanks have stirring capabilities which would alleviate the potential stratification of D975 diesel fuel, but these capabilities are rarely installed on tanks holding fungible grade fuels. Tank stirrers are very expensive and, once installed, require a time consuming process to operate.

The second method requires the terminal operator to test each load delivered to the tank truck. This method requires the time and expense to complete the test, both of which result in no benefit to the fuel supplier.

It is for all of the reasons above that API supports the disclosure of ranges of biodiesel content consistent with the FTC pump labeling rules: (1) up to 5 percent biodiesel by volume, (2) greater than 5 percent and up to 20 percent biodiesel by volume, and (3) greater than 20 percent biodiesel by volume. However, until FTC amends the Automotive Fuel Ratings, Certification and Posting rule (16 CFR 306) to allow for certification of automotive fuel ratings for biodiesel in these ranges, the NCWM cannot enact a similar change consistent with the requirements of FTC's preemption authority (16 CFR 306.4). Should FTC amend their regulation to reflect API's preferences for disclosure of biodiesel content in accordance with the ranges above, API would urge the NCWM to amend Publication 16 to mirror the FTC regulation consistent with the requirements of 16 CFR 306.4.

Documentation Flexibility

Regarding Section 3.15.3, API opposes efforts to mandate the disclosure of biodiesel content on *all* transfer documents. Fuel providers need the flexibility to determine on which document this information will be included given that the recipient of the order knows which document contains the information. Requiring disclosure on all transfer documents is entirely too inclusive and would be burdensome to fuel providers with no identified benefit.

Conclusion

There are many issues associated with requiring fuel suppliers to determine and label the amount of biodiesel in D975 diesel fuel. In summary, API supports NCWM efforts to inform retailers that D975 diesel fuel may contain up to 5 percent biodiesel by volume, but API opposes requirements to convey the exact percentage under or equal to 5 percent. Additionally, API supports the original wording of 3.15.3 which allows the fuel supplier flexibility in determining on which document to disclose biodiesel content.

Thank you very much for your consideration of our comments. I'd be happy to answer any questions the Fuels and Lubricants Subcommittee may have.

Sincerely,

Brian Knapp

JANICE K BREWER
GOVERNOR

KEVIN TYNE
INTERIM DIRECTOR

ARIZONA DEPARTMENT OF WEIGHTS AND MEASIMES
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January 21, 2011

John Gaccione
Committee Chair
Law &Regulation Committee

Ronald Hayes
Committee
Chair Fuels
and Lubricant
Subcommitte
e

Re: L&R Committee 2011 Interim Agenda Appendix — Item 237-3: Engine Fuels and Automotive Lubricants

Dear Committee Chairs:

I am writing you today to put forth Arizona's position on the Engine Fuels and Automotive Lubricants issue (item 237-3) being considered by your committee. This agenda item specifically deals with the requirements for Product Transfer Documents, ("PTDs") and biodiesel blending. The State of Arizona Department of Weights and Measures strongly supports this requirement as critically necessary information for customers who receive the product. Without the biodiesel amount information customers will be subjected to unnecessary new costs to determine the levels and be required to conduct laboratory analysis which are currently avoided by capturing levels on the PTDs. Arizona Revised Statutes ("ARS") states that:

ARS 41-2083(M)
"M. For biodiesel blends that contain more than five percent by volume of biodiesel, a person shall prepare product transfer documents in a manner that notifies the transferee of the percent by volume of biodiesel in the product. For diesel fuel that contains five per cent or less by volume of biodiesel, a person shall prepare product transfer documents in a manner that notifies the transferee of any volume percent of biodiesel intentionally added to or known by the transferor to be in the product."

be nothing to hide. This information can be important to the person receiving the product especially if they are going to blend additional biodiesel into it.

I understand that the Fuels and Lubricant subcommittee of the L&R committee is in the process of addressing this issue.

The State of Arizona Department of Weights and Measures has reviewed the American Petroleum Institute's, ("API") comments. It appears that API's position is that the FTC regulation also covers so called "labeling" on PTDs. We do not agree that the labeling in the FTC regulations apples to PTDs. Clearly the FTC regulations do apply to dispensers at which biodiesel is dispensed. The Department has adopted the FTC regulations relating to dispenser labeling. They are found in ARS 41-2083 which states the following:

ARS 41-2083(L)

"L. A person shall label dispensers at which biodiesel or biodiesel blends are dispensed in conformance with 16 code of federal regulations part 306 and 40 Code of Federal Regulations sections 80.570, 80.571, 80.572, 80.573 and 80.574. This section does not preclude a person form labeling a dispenser that dispenses diesel fuel that contains up to five per cent biodiesel, with a label that states "may contain up to five per cent biodiesel"."

The Department also agrees the diesel fuel is not regulated under the fuels rating rules, however, the Department believes that PTDs and language requirements are clearly regulated by The Environmental Protection Agency, ("EPA"). EPA in 40CFR 80.1453 entitled ***'What are the product transfer document (PTD) requirement for the RFS program?"*** fully lays out the PTD requirements for the Renewable Fuels Standard, ("RFS") in this section it states:

"The number of gallon-RINs being transferred"

We also would point out regarding 16CFR (306), nowhere in the regulations do they talk about the PTDs and the required language. They talk about certification. Certification can be done through the use of documents used for PTDs.

It is the Department's position in the interest of transparency and full disclosure to the consumer that this information, if known, should be disclosed on the PTD. To do otherwise adds significant costs and burdens to the process. Thank you for taking the time and allowing us to present our position. We apologize for not being there in person but as you are aware state budgets will not allow for travel.

Sincerely,

P. Tyne

Kevin Tyne
Interim Director
Arizona Department of Weights and Measures

Arizona Petroleum Marketers Association

APMA

January 23, 2011

Mr. John Gaccione
Chairman, Laws and Regulations Committee
National Conference on Weights and Measures
Director, Westchester County Department of Consumer Protection
112 East Post Road, 4th floor
White Plains, NY 10601

Dear Chairman Gaccione:

On behalf of the Arizona Petroleum Marketers Association, I would like to thank the committee for this opportunity to share our concerns related to two items from the Laws & Regulations Committee 2011 Interim Agenda.

ITEM 237-3: Engine Fuels and Automotive Lubricants Regulation, Section 3.15. Biodiesel and Biodiesel Blends

APMA concurs with PMAA and other state petroleum marketing associations that terminal documents should disclose the exact volume percentage of biodiesel on the product transfer document (PTD). Simply stating "may contain up to 5% biodiesel" on documents does not prevent downstream blending problems. Information must be accurate and disclosed at the terminal to ensure that customers are receiving the right mixture of biodiesel product downstream. Requiring this level of disclosure does not preclude compliance with the current FTC retail labeling requirements.

APMA would like to recommend that the L&R Committee consider an amendment to remove the initial proposed language for Item 237-3 in the agenda and rather add a new section to read:

3.15.5 Documentation for Product Transfer Document Disclosure *– For biodiesel blends that contain more than five percent by volume of biodiesel, a person shall prepare the product transfer documents in a manner that notifies the transferee of the percent by volume of biodiesel in the product. For diesel fuel containing five percent or less by volume of biodiesel, a person shall prepare product transfer documents in a manner that notifies the transferee of any volume percent of biodiesel intentionally added to or known by the transferor to be in the product.*

This language will protect the petroleum marketer wishing to produce additional biodiesel blends downstream and the petroleum marketer who may have contractual agreements with customers to provide a biodiesel-free product. Most importantly, the language allows for transparency and disclosure for the consumer.

APMA would encourage the NCWM FALS Subcommittee and the L&R Committee to carefully review the analysis provided in comments from PMAA and the Arizona Department of Weights & Measures challenging concerns that some members of the Fuels and Lubricants Subcommittee have raised that requiring PTD disclosure of biodiesel content is somehow in violation of 16CFR (306) and/or the current FTC retail labeling requirements for biodiesel and biodiesel blends.

ITEM 237-4: Engine Fuels and Automotive Lubricants Regulation, Section 2.1.2. Gasoline-Oxygenated Blends and 2.1.3. Gasoline-Ethanol Blends

APMA would recommend that Item 237-4 remain an informational item this year so that the myriad of questions surrounding the introduction of E-15 into the marketplace can be addressed holistically in Handbook 130.

Specifically, APMA is concerned about existing fuel equipment and the impact E-15 may have on effectiveness and longevity. There are still studies being conducted on drive-ability issues related to the E-15 which inevitably lead to questions of liability and where these responsibilities will fall within the chain of product distribution. What will NCWM require in terms of consumer notification especially since there will potentially be significant price differentials between unblended gasoline, E10 and E15? There also remain distillation issues which need to be addressed in the Handbook as well.

Again, we appreciate the chance to share our concerns and look forward to continued participation with NCWM on these important issues affecting the petroleum industry.

Sincerely,



Andrea M.G. Martincic
Executive Director

Cc: Ron Hayes, Chair, NCWM Fuels and Lubricants Subcommittee

APMA* P.O. Box 93426* Phoenix AZ* 85070* (480) 460-1561* FAX (480) 460-9016

From: Gaccione, John [jpg4@westchestergov.com]
Sent: Wednesday, January 19, 2011 9:55 AM
To: Sefcik, David; Joe Benavides; Jonelle Brent; Lance Robertson; Warfield, Lisa; Ray Johnson; Rob Underwood; Ron Hayes; Tim Lloyd
Subject: FW: Biodiesel Terminal Documents & E-15

Hi Folks,

Received this yesterday.

Speak with you shortly.

John

John P. Gaccione
Acting Director of Consumer Protection
Director of Weights and Measures
Westchester County Consumer Protection
(914)995-2164

From: Ronald J. Leone [mailto:ron@mpca.org]
Sent: Tuesday, January 18, 2011 10:28 AM
To: 'Ron"Hayes'; 'Albert, John'; 'Upschulte, Kevin'; Gaccione, John; joe.benavides@texasagriculture.gov
Cc: 'Rob Underwood'; 'tom palace'; 'Ann Hines'; tkeigher@npcainc.com; kmadaras@fmanj.org; john@pmcofiowa.com; 'Gene Inglesby'; 'Andrea Martincic'; 'Michael Fields'; 'Emily LeRoy'; 'Brad Stotler'; 'Holly Alfano'; 'Sam Bell '; 'Columbus, R. Timothy'; 'John Eichberger'; 'Lyle Beckwith'
Subject: Biodiesel Terminal Documents & E-15

Dear L&R Committee Chair John Gaccione (NY) & FALS Chair Ron Hayes (MO):

The Missouri Petroleum Marketers & Convenience Store Association (MPCA) is a 350+ member statewide trade association located in Jefferson City, Missouri, which represents the majority of the convenience stores, gas stations and petroleum marketers located in and around Missouri.

Unfortunately, I am unable to attend the 2011 NCWM Interim Meeting being held in Dallas, TX, on 1/23 – 1/26. ***As a result, please accept this email as MPCA's formal comments on the biodiesel terminal document and E-15 issues. Please include this email as part of the formal record and please forward this email to all members of the L&R Committee & the FALS.***

1. Biodiesel Terminal Documents. As you know, many fuel marketers across the U.S. blend ethanol &

biodiesel into their transport loads of fuel at locations away from the terminal and thereafter sell the blended fuel at retail. This "away from the terminal blending" is critical because it:

a. Supports U.S. agriculture & increases the use of renewable fuels. This is a key goal of most state Departments of Agriculture & thus W&M divisions.

b. Reduces over-blending by marketers & thus misfueling by consumers.

c. Is good for the environment because more renewable fuel will be blended.

d. Supports small businesses, a key component of our collective economic recovery.

e. Decreases our dependence on fossil fuels from countries that are often hostile to the U.S. and our way & quality of life.

Formal Position. For the reasons detailed above & more, MPCA, PMAA & many other state & national associations strongly believe that the L&R Committee, FALS and the entire NCWM should require that terminal documents, including bills of lading, shipping papers and/or invoices, specify the exact percentage of biodiesel (& ethanol) contained in each and every load of fuel to maximize "away from the terminal blending".

2. E-15. There are many unanswered questions regarding E-15 including:

a. Fuel Equipment. Can existing equipment – tanks, pumps & piping - handle E-15? What about the impact E-15 will have on the equipment warranties?

b. Automobiles. Will car manufacturers warrant their engines for E-15? What model years can handle E-15?

c. Liability. Who is liable for the inevitable increase in misfueling – e.g., putting E-15 in a 1998 Honda Accord?

d. Consumer Notice. What consumer notices will be required on street signage as well as on the pumps?

e. Competition. The competitive impact of E-15 given the potential price differential between unblended, E-10 & E-15?

f. RVP. Handling the 1 pound RVP issue.

g. Tank Insurance. How does E-15 impact tank insurance like PSTIF?

Formal Position. For the reasons detailed above & more, MPCA, PMAA & many other state & national associations strongly believe that the L&R Committee, FALS and the entire NCWM should continue to

study E-15 but take no formal position(s) and make no formal policy until all of the above issues have been adequately addressed.

Sincerely, Ron

Ronald J. Leone, Esq.

Executive Director

Missouri Petroleum Marketers & Convenience Store Association (MPCA)

205 E. Capitol Avenue, Suite 200, Jefferson City, MO 65101

C: 573.864.5189; W: 573.635.7117, ext. 16; F: 573.635.357

January 20, 2011

Mr. John Gaccione
Chairman, Laws and Regulations Committee
National Conference on Weights and Measures
Director, Westchester County Department of Consumer
Protection 112 East Post Road, 4th floor
White Plains, NY 10601

Dear Chairman Gaccione:

On behalf of the NATSO, which represents America's travel plazas and truck stops, I would like to thank you for addressing important issues relevant to the petroleum marketing and fuel retailing industry during the National Conference on Weights and Measures (NCWM) interim and annual meetings.

NATSO is a national trade association that represents highway travel plazas and truck stop owners and operators. The association represents 235 corporate entities that have over 1,200 locations across the nation. It's estimated that the highway travel plaza and truck stop industry sells more than ninty percent of all diesel fuel sold at retail in the United States.

I am writing today to highlight the need to modify language in Item 237-3, Engine Fuels and Automotive Lubricants Regulation, Section 3.15 Biodiesel and Biodiesel Blends (Publication 16). NATSO is concerned that Item 237-3 in Publication 16 may have unintended consequences affecting fuel retailers and consumers if the current language is approved without modification. It is imperative to require the disclosure of the exact volume percent amount of biodiesel blends, even if such blends are believed to contain less than five percent biodiesel. **NATSO urges the Committee to modify the language to require the disclosure of the exact volume percentage of biodiesel below five percent on product transfer documents (PTDS).**

There are two ways biodiesel can get into the diesel stream. One option is to inject biodiesel into diesel at the downstream terminal. In this case, the terminal knows blending is occurring and should be required to disclose it. The biodiesel content should be indicated on the bill of lading (BOL) because a conscious decision to blend is being made at the local level. The other option is to inject biodiesel into diesel at the refinery before it goes into the pipeline. It's our belief that pipelines already test refinery inputs into their pipeline. Disclosing the amount of biodiesel injected into their system would be the first step in tracking the product from the refinery.

It is optional that suppliers put biodiesel into diesel fuel being shipped, but financially attractive to them due to the $1-per-gallon biodiesel blender's tax credit and Renewable Identification Number (RINs), which are currently traded among producers, oil companies, marketers, and banks.

NATSO believes the refiner should know what they are selling and the components therein. Information must be accurate and disclosed at the terminal to ensure that customers are receiving the right mixture of biodiesel product. If refiners choose to blend, there should be a requirement to disclose the amount biodiesel in the fuel as the product is transferred along the distribution chain.

NATSO urges you to take these comments into consideration when the L&R Committee meets in Dallas, Texas in January 2011.

Sincerely,



Holly Alfano
Vice President, Government Affairs
NATSO

PETROLEUM MARKETERS ASSOCIATION OF AMERICA
1901 N. Fort Myer Drive • Suite 500 • Arlington, VA 22209-1604 • 703-351-8000 • Fax 703-351-9160

Jan 21, 2011

Mr. John Gaccione
Chairman, Laws and Regulations Committee
National Conference on Weights and Measures
Director, Westchester County Department of Consumer Protection
112 East Post Road, 4th floor
White Plains, NY 10601

Dear Chairman Gaccione:

On behalf of the Petroleum Marketers Association of America (PMAA), I would like to thank you for your efforts to address important issues relevant to the petroleum marketing industry during the National Conference on Weights and Measures (NCWM) interim and annual meetings. PMAA is a national trade association in the petroleum industry representing 8,000 independent petroleum marketing companies who own 60,000 retail fuel outlets such as gas stations, convenience stores and truck stops. Additionally, these companies supply motor fuels to 40,000 independently owned retail outlets and heating oil to seven million households and businesses.

I am writing you today to highlight the need to modify language in Item 237-3, Engine Fuels and Automotive Lubricants Regulation, Section 3.15 Biodiesel and Biodiesel Blends (Publication 16). PMAA is concerned that Item 237-3 in Publication 16 may have unintended consequences on petroleum marketers and consumers if the current language is approved without modifications. PMAA urges the Committee to modify the language in item 237-3 to require the disclosure of the exact volume percentage of biodiesel content in blends below five percent on product transfer documents (PTDS).

Currently, biodiesel producers, oil companies and terminals are not required to disclose the exact volume percentage of biodiesel blends below five percent on PTDs. As a result, petroleum marketers could unknowingly purchase a two percent biodiesel blend and then immediately blend an additional five percent biodiesel creating an unintended B7 blend. This is a very serious concern to marketers due to limitations in equipment specifications that often limit biodiesel blends to five percent or less. Such limits exist for motor vehicle engines, petroleum storage infrastructure equipment, emergency generators and heating equipment. For example, John Deere and Caterpillar offer engine warranties that allow small percentage blends of biodiesel (B2 or B5). However, those warranties are void if biodiesel blends are used that exceed manufacture specifications. Consequently, petroleum marketers face a greater risk of liability from consumers with voided warranties.

Moreover, consumers need to rely on accurate statements of biodiesel content from their supplier not only for equipment compatibility and warranty purposes but to ensure maximum engine performance and mileage expectations. Power output is decreased, energy content reduced and mpg rates lowered as biodiesel content in blends increase. Petroleum marketers must be able to ascertain the accurate biodiesel content of the fuel they purchase in order to enter into fuel supply contracts with their wholesale customers. The precise biodiesel content of the fuel is a legally binding term of the supply contract and is relied upon by the wholesaler in order to ensure the blend is compatible with its intended use.

PMAA believes that all parties along the distribution chain have a responsibility to disclose accurate biodiesel content information for the fuel they supply. It is only logical that this responsibility start at the top of the supply chain where the fuel originates and a baseline for biodiesel content is most easily established. Refiners, biodiesel producers and terminal operators are uniquely positioned in this respect and have the necessary resources to manage product in order to accurately disclose the biodiesel content of the fuel they supply. The task of establishing baseline biodiesel content should not be left to small business petroleum marketers who blend downstream and lack the resources and logistics to undertake a comprehensive fuel testing program. Downstream marketer-blenders are fully capable of including accurate biodiesel

content on PTDs to their customers provided their upstream suppliers do the same for them. PMAA does not believe that downstream marketers should bear all the liability and costs associated with accurately establishing the biodiesel content of fuel produced upstream.

Some companies contend that the Federal Trade Commission's (FTC) regulation under 16 CFR 306 – Automotive Fuel Ratings, Certification and Posting preempts state laws including NCWM rules and regulations that are not the "same" as FTC rules and would violate 16 CFR 306.4.[1]

However, you should note that:

1. Section 205 of the Energy Independence and Security Act of 2007 (EISA) (Public Law 110-140) mandates the FTC to promulgate regulations for the labeling of: "*Each retail diesel fuel pump...*" No language in Section 205 of EISA gives the FTC authority over PTDs – only retail diesel fuel pump labeling.[2]

2. In comments to the FTC regarding the rating of all biodiesel blends, a supplier trade group argued that not requiring the exact disclosure of biodiesel blends below five percent on transfer documents could lead to inaccurate pump labels. To limit the risk of violating pump labels, the supplier trade group recommended that producers and distributers disclose any amount of biodiesel in the fuel they supply.[3] The trade group's statement seems to not be consistent with the letter sent to the Fuels and Lubricants Subcommittee dated Sept. 7, 2010. [4]

If NCWM Laws and Regulations Committee approves Item 237-3 in its current form, it will likely limit the ability for petroleum marketing companies from blending biodiesel below the rack. No petroleum marketing company will want to be in violation of FTC labeling requirements. Is this what NCWM officials are willing to accept regarding the blending of biodiesel below the rack? For instance, many private and public fleets in the state of Tennessee have converted to B20 contracts with petroleum marketing companies. PMAA member companies will not take the risk to blend additional biodiesel into a tank which may contain B2 or B5 for fear that they may create a B22 or B25 blend which would violate their supply contract as well as FTC labeling regulations. It has been posited by some that the underlying reason for API's position is to eliminate all below the rack blending in order for their member companies to control the blending process which includes the $1-per-gallon biodiesel blender's credit and Renewable Identification Number (RINs) which are currently traded among producers, oil companies, marketers, and banks.

Conclusion

PMAA believes terminal documents should disclose the exact volume percentage of biodiesel on the invoice, bill of lading (BOL), and shipping paper, (not simply say "may contain up to 5% biodiesel") to ensure no over-blending off-site. Information must be accurate and disclosed at the terminal to ensure that customers are receiving the right mixture of biodiesel product downstream. In regard to retail dispensers, PMAA believes blends up to five percent biodiesel should be permitted without additional labeling or notices. Therefore, PMAA urges the FALS and L&R Committee to add a new section to the original version of Item 237-3 proposed by the Southern Weights and Measures Association (SWMA). The new section shall say:

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[1] See API's comments to the Fuels and Lubricants Subcommittee regarding Publication 16: 237-3 – Engine Fuels and Automotive Lubricants Regulation, Section 3.15 Biodiesel and Biodiesel Blends; Page 3 and 4 – Federal Trade Commission Regulation (Sept. 7, 2010)

[2] Section 205 of EISA 42, U.S.C. 17021, BIOMASS-BASED DIESEL AND BIODIESEL LABELING states: (a) IN GENERAL.—**Each retail diesel fuel pump shall be labeled** in a manner that informs consumers of the percent of biomass based diesel or biodiesel that is contained in the biomass-based diesel blend or biodiesel blend that is offered for sale, as determined by the Federal Trade Commission.

[3] See FTC's 16 CFR Part 306, Automotive Fuel Ratings, Certification and Posting. Notice of proposed rulemaking, request for comments. Pages 12 - 13 API Comment; ConocoPhillips Comment; NPRA Comment

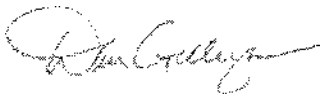
[4] *Id page 2 API Comments to Fuels and Lubricants Subcommittee*

3.15.5 Documentation for Product Transfer Document Disclosure — For biodiesel blends that contain more than five percent by volume of biodiesel, a person shall prepare the product transfer documents in a manner that notifies the transferee of the percent by volume of biodiesel in the product. For diesel fuel containing five percent or less by volume of biodiesel, a person shall prepare product transfer documents in a manner that notifies the transferee of any volume percent of biodiesel intentionally added to or known by the transferor to be in the product.

Finally, requiring suppliers to disclose on product transfer documents (PTDs) the exact volume percentage of biodiesel should be at the discretion of the NCWM not the FTC. PMAA does not believe PTD disclosure is in conflict with current C retail labeling requirements for biodiesel. NCWMs' Fuels and Lubricants Subcommittee continues to refer to FTC's authority to preempt any NCWM or state action on PTDs. However, given Section 205 of EISA, PMAA urges NCWM Laws and Regulations Committee to reconsider requiring the exact biodiesel disclosure on PTDs.

PMAA urges you to take these comments into consideration when the L&R Committee meets in Dallas, Texas in January 2011.

Sincerely,



Dan Gilligan
PMAA President

Appendix F

Item 237-4: Handbook 130, Engine Fuels and Automotive Lubricants Regulation

Section 2.1.2. Gasoline-Oxygenated Blends and Section 2.1.3. Gasoline-Ethanol Blends

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Mid Level Ethanol Blends Research Coordination Group Compilation of Projects with E10+ Fuel Formulation Information/August 27, 2010 ..... L&R - F10
Growmark/September 7, 2010 ..... L&R - F50
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ASTM Specification Change Process

Lewis M. Gibbs
Chevron Global Downstream LLC

May 5, 2010

ASTM D4814

Specification for Automotive Spark-Ignition Engine Fuel

- Currently Applies to All <50 Vol % Ethanol Blends
- Maximum Ethanol Content Limited by EPA Waiver
- If E15 Receives a Waiver, It is Automatically Covered by D4814
- Volatility Classes AA, A, B, and C Have a T50 Minimum of 170°F for E0 and Would Apply to E15
- Volatility Classes D and E Have a T50 Minimum of 150°F for All Fuels (E0, E10, and Would Apply to E15)
- All Volatility Classes for E1 to E10 Have a T50 Minimum of 150°F
- API Blending Study Showed:
  - Only 14% of E15 Volatility Classes AA, A, B, and C Samples Met 170°F T50 Minimum
  - All E15 Classes D and E Samples Met 150°F T50 Minimum

ASTM D4814 Cont'd.

- Partial Waiver May Require Discussion in Scope
- Balloting by ASTM Would be Required to Extend 150°F T50 for All Volatility Classes for E15
- Typical Timing to Make a Change in ASTM is 14 Months Without Persuasive Negative Votes
- Emergency Timing is 6 Months with No Negative Votes at Both Subcommittee and Committee Levels. Requires Approval of Committee D02 Chairperson
  - If Any Negative Vote is Cast, Process Starts Over
  - Negative Votes are a Concern Since There Are Minimal Driveability Data for E15
  - Data Will be Available from CRC/Altitude and CRC/ASTM Hot-Fuel Handling Programs

Federal

- Vapor Pressure Allowance
  - Current EPA Regulations Allow 1.0 psi Higher Vapor Pressure for Gasoline-Ethanol Blends Containing 9 to 10 volume % Ethanol From May Through September 15 Than Those of Phase II (1992) Vapor Pressure Regulations for the Same Period, Except for Fuels Blended to Meet the Complex Model Regulations.
  - The Regulation Will Need to be Extended to Cover E15 Involving Changes to the Clean Air Act (211(h)(4))
- Revision to the Complex Model for Federal RFG (plus deferral of anti-backsliding rule-making for Conventional Gasoline)[1]
- Registration of E15 as New Fuel
- Certification of Detergent Additives in E15

[1]ASTM Committee D02 Research Report D02: 1347 on Reformulated Spark-Ignition Engine Fuel will Require Revision

NCWM

- The National Conference on Weights and Measures Issues NIST Handbook 130 Which Contains Model Laws for Fuels and Lubricants
  - Follows ASTM D4814 Except for:
    - Provides Federal 1.0 psi Allowance for 9 to 10 volume % Ethanol Blends for May 1 Through September 15 and 1.0 psi Allowance for Remainder of the Year for 1 to 10 Volume % Ethanol
    - Volatility Classes 4, 5, and 6 TVL=20 Limits are Less Restrictive for Up to 10 volume % Ethanol
  - Action
    - Can't Initiate Action Until Federal Vapor Pressure Allowance is Extended to Cover E15
  - Timing
    - Balloting July 2011 and Publish Handbook in 2012

State Implementation

- Adopt D4814
  - 37 States and One County
  - 25 Specify Latest Version
    - Latest Version on ASTM Web Site
    - Latest Version Published in Annual Book of ASTM Standards
  - 12 Specify Specific Versions
    - Range From 1989 to 2009b
- Own Specification
  - 8 States (Some Based on D4814)
- No Specification
  - 5 States and DC

Source: Herman & Associates

State Implementation Cont'd.

- Specify 1.0 psi Vapor Pressure Allowance
  - 16 States – 9 to 10 Volume % Ethanol
  - 10 States – NIST Handbook 130 (9 to 10 Volume %)
  - 5 States – Up to 10 Volume %
  - 1 State – Up to 10 Volume % or Any Percentage Specifically Authorized in an EPA Waiver
  - 1 State – Over 1 Volume % Ethanol
- Modify State Air Pollution Regulations
  - E.g. California Predictive Model
- Process to Change State Regulations
  - Emergency Regulations
  - Hearings and W & M or APCD Action
  - Legislative and Governor

Source: Herman & Associates

ASTM D4806

Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel

- For E15 a Higher Level of Ethanol will be in the Finished Automotive Spark-Ignition Engine Fuel
- Some Property Limits May Need Reducing to Ensure Proper Vehicle Performance
  - Chlorides
  - Sulfates
  - Acidity
  - Copper

Update: New Ethanol Blends

Northeastern Weights and Measures Meeting
October 2010

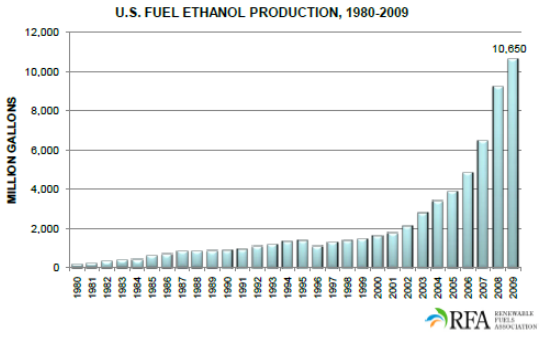
RFA RENEWABLE FUELS ASSOCIATION

Renewable Fuels Association

- National Trade Association for the domestic ethanol industry promoting policy, regulations, research and development for the industry.
- History of the Association
  - Organized in 1981
  - Ethanol Producers constitute the Board of Directors
  - Representing domestic production
  - Leader in legislative and technical efforts of industry

RFA RENEWABLE FUELS ASSOCIATION

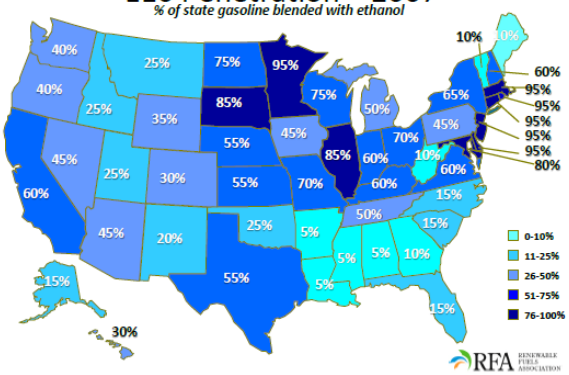
Historical U.S. Ethanol Production



RFA RENEWABLE FUELS ASSOCIATION

E10 Penetration – 2007

% of state gasoline blended with ethanol

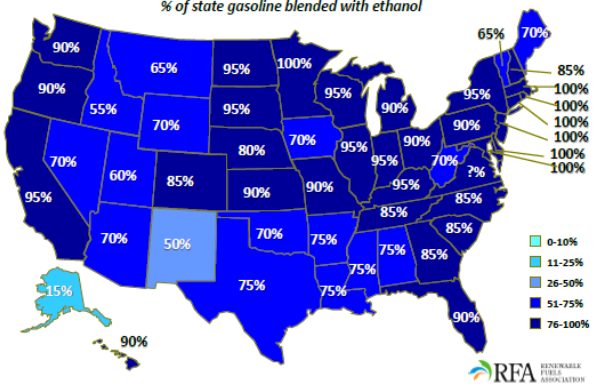


RFA RENEWABLE FUELS ASSOCIATION

Sources: RFA, EIA, state DORs, industry sources

E10 Penetration – 2010

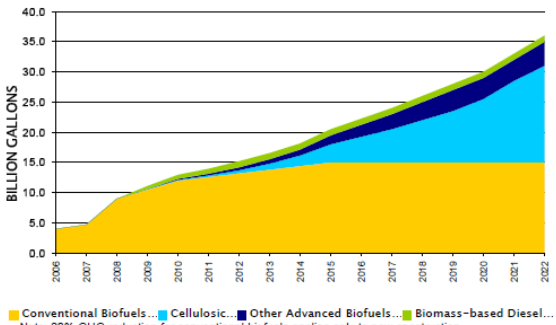
% of state gasoline blended with ethanol



RFA RENEWABLE FUELS ASSOCIATION

Sources: RFA, EIA, state DORs, industry sources

Renewable Fuels Standard (RFS)



RFA RENEWABLE FUELS ASSOCIATION

The Bottom Line

- EISA requires consumption of 36 billion gallons of renewable fuels annually by 2022
- Ties a carbon intensity to motor fuels
- Most of the renewable fuel will be ethanol (~33-34 billion gallons)
- What will be the fuel mix?
  - ~34 billion gallons = 27% of 2022 projected gasoline use

Transportation Fuels Today

- 147 billion gallons a year gasoline
  - 12.5 billion gallons a year ethanol
- Industry considerations:
  - E10 saturation,
    - Currently >90% E10 in the US
  - Declining fuel use in 2008
  - Federal Highway Administration 2009 demand -0.1%

Ethanol as a Fuel & Fuel Additive

- E10 (10% ethanol by volume)
  - Approved for use in all vehicles and engines
  - ~98% of ethanol consumed as E10
  - ~90% of U.S. gasoline blended with ethanol
- E85 (70-85% ethanol by volume)
  - For use in flex-fuel vehicles (FFVs) only
  - 7+ million FFVs; ~2,200 retail outlets
  - <2% of ethanol consumed as E85
- Mid-level blends (20, 30, 40% ethanol by volume)
  - For use in FFVs only
  - Dispensed by "blender pumps" (<250 stations)



Moving beyond E10?

- Existing fuel pool
  - Limited to 10% volume ethanol
    - Market conditions/ regulatory requirements
    - Gasoline saturation
    - Infrastructure/ throughput saturation
- Future fuel pool
  - Fuel waiver application for E15 submitted
    - Not a mandate, this would be voluntary

E15 Partial Approval/ Partial Denial

- March 6, 2009 waiver submitted to US EPA to increase the allowable ethanol content in gasoline to 15% volume.
- US EPA received >78,000 comments from the public
- EPA responded October 13, 2010 with partial approval, partial denial
  - Approved for Vehicle MY2007 and newer
  - Denied for Vehicles MY2000 and older
  - Punted for vehicles MY2001 -2006 until later date
  - Initiated Proposed Rulemaking for labeling and Complex Model modifications
  - See: http://www.epa.gov/otaq/regs/fuels/additive/e15/

Legislative & Regulatory Issues for E10+

- EPA approval of higher ethanol content as a fuel additive in gasoline is only step 1.
- As stated in EPA's recent update on the E15 waiver application:
  - "It's also important to remember that there are a number of additional steps that must be completed – many of which are not under EPA or DOE control – to allow the sale and distribution of E-15. These include but are not limited to: testing on dispensing equipment; changes to state laws to allow for the use of E15; and completion of the fuels registration process by industry."

RFA

Remaining Impediments for E10+ Fuels*

- Health effects testing/fuel registration
- State regulatory issues
- ASTM/ NIST HB130 specification
- Octane certification
- #1 waiver for vapor pressure
- Fuel detergent certification
- Fire code and UL issues
- Automaker warranties
- Misfueling liability
- Safety and emergency response

*Confirmed with API report: "**Identification and Review of State/Federal Legislative and Regulatory Changes Required for the Introduction of New Transportation Fuels" Aug. 2010, Sierra Research**

RFA

L. Gibbs, API, 5-5-10

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RFA

L. Gibbs, API, 5-5-10

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  - E.g. California Predictive Model
- Process to Change State Regulations
  - Emergency Regulations
  - Hearings and W & M or APCD Action
  - Legislative and Governor

Source: Herman & Associates

RFA

EERC
Ethanol Emergency Response Coalition

- Public and Private Industry coming together to provide much needed emergency response information.
- New environmental response information available on website:

Ethanol Emergency Response information available:

www.ethanolresponse.com

RFA


RFA
RENEWABLE
FUELS
ASSOCIATION
425 Third Street SW, Suite 1150 Washington, DC 20024
P: 202.289.3835 | www.EthanolRFA.org | F: 202.289.7519

Summary of Auto/Oil E10+ Test Program for Highway "Non-FFV" Vehicles

Item #	Title	Project #	Status
1	Fuel Storage and Handling	CRC AVFL-15	AVFL-15 preliminary work is underway; more funding needed
The industries understand system components for E10 and also for E85, but it is unclear at what level of ethanol content above 10% that E10-rated parts fail. The objective of AVFL-15 is to determine the durability of wetted fuel components/systems. Fuel storage and handling is studied in component/systems durability testing. Resource constraints limit the scope of AVFL-15, preventing a definitive program, hence additional testing is required.			
2	Base Engine Durability	CRC CM-136-09	The initial phase of this program is underway
The industry knows what is required to upgrade engine components for E22, E85 and E100. Some automakers have done internal testing and have found sensitivity to intermediate ethanol blend levels for non-FFV vehicles. The testing for base engine durability (base refers to the actual machinery as opposed to the sensors, controls and the like) is embodied in CRC RFP No. CM-136-09. The initial round of vehicle testing is nearing completion.			
3	On-Board Diagnostics (OBD) Evaluation	CRC E-90	The pilot phase of E-90 is complete; more data needed
The automakers have a good understanding of the theoretical effects of ethanol on OBD. The issue is how OBD systems actually work in a fleet of aged production vehicles. The initial phase of vehicle data collection has been completed and the final report is on www.crcao.org. Two additional phases are planned for 2010.			
4	Tailpipe Emissions for SULEV Vehicles and at Cold Ambient Temperatures	CRC E-92	Planning for future work is ongoing pending available funding
Starting with the 2010 model year automakers have to meet Non-Methane Hydrocarbon (NMHC) emissions at a 20F start temperature. Automakers have had to meet stringent SULEV emissions at a 50F start temperature for many years. The enleanment due to oxygen in ethanol and the low volatility of the ethanol portion of the fuel blend at low temperature gives concerns that existing and planned vehicles designed for federal and California emissions test fuels will not meet their required emissions standards when operated on mid-level ethanol blends. This program does not envision vehicle aging, however limited funding has delayed the start of this test program.			
5	Catalyst Durability and Degradation	CRC E-87	The course and fate of this program is currently unclear
The issue of accelerated catalyst aging with intermediate ethanol blends was well-documented in the Orbital research study conducted in Australia. DOE found that 44% of vehicles they tested had the same control architecture as those that had problems with E20 in Australia and their data, when combined with CRC E-87-1, data indicate that 35-45% of the US fleet will have this sensitive control architecture. E-87-1 was funded by CRC and the report is on www.crcao.org. Durability testing to identify this phenomenon is the scope of follow-on testing which is underway generating data through DOE funding with minor support funding from CRC.			
6	Evaporative Emissions Durability	CRC E-91	This program is underway
As reported in previous intermediate ethanol blend research coordination meetings, CRC has conducted research projects under E-65 and E-77 on the effects of ethanol on evaporative emissions. However, these tests have all looked at the effects of short exposures. This project is defined in CRC RFP No. E-91. The contract has been awarded, test vehicles have been acquired, and initial data collection is underway for the 2010-2011 program.			
7	Emissions Inventory and Air Quality Modeling	A-67 / A-73	A-67 results to be released in early 2010 and A-73 is planned for a completion late in 2010
The CRC Atmospheric Impacts Committee is leading this effort in coordination with other stakeholders. A-67 (Estimating Ozone from Fuel Reformulation) and A-73 (Emissions Modeling and Air Quality Modeling) are the two CRC programs that will address this subject. These efforts will rely on obtaining emissions data from the other CRC programs above.			
8	Exhaust Emissions on Vehicles Aged On Mid-Level Ethanol Blends	CRC New Project	Portions of this work will be addressed under A-73
A good collection of aged vehicle data will be acquired as part the overall program effort. These data will be used to assess direct emissions impacts from intermediate ethanol blends and for conducting air quality modeling evaluations.			

4/29//2010

Mid Level Ethanol Blends Research Coordination Group Compilation of Projects with E10+ Fuel Formulation Information
Updated August 27, 2010

CRC Projects/ Reports (www.crcao.org)

1) E-65-3 Fuel Permeation from Automotives
   a. Conventional vehicles tested on E0, E6, and E20
   b. Flex fueled Vehicle tested on E85
   c. Project complete; final report on CRC website
2) E-67 Effects of Ethanol and Volatility Parameters on Exhaust Emissions
   a. E0, E6 and E10 fuels
   b. Project complete; final report on CRC website
3) E-74 Effect of CO and RVP on Exhaust Emissions of In-Use Fleet
   a. E0, E10 and E20 fuels
   b. Project complete
4) E-77 In-Use Evaporative Emissions
   a. Pilot program complete (E0 testing only); final report on CRC website
   b. E0, E10, and E20 fuels
   c. E-77-2 main program testing ongoing
5) E-80 Exhaust and Evaporative Emissions Testing of Flex-Fueled Vehicles
   a. Pilot program: E6, E85, 50/50 mix
   b. Main program E9, E32, E66 and E85
   c. Project testing in progress
6) E-84 Review of Prior Studies of Fuel Effects on Emissions
   a. Limited data above 10% ethanol reported
   b. Project complete; final report on CRC website
7) E-87 Mid Level Ethanol Blend Catalyst Durability Study
   a. E0, E10, E15 and E20 fuels
   b. Project testing in progress
8) E-89 EPAct Light Duty Vehicle Fuel Effects
   a. E0, E10, E15 and E20 fuels
   b. Project testing by EPA in progress
9) CRC Report No. 629 Coordinating Research Council, Inc., 2002 Hot Fuel Handling Program
   a. E0, E3, E6, E10 fuels
   b. Project complete; final report on CRC website
10) CRC Report No. 638 Coordinating Research Council, Inc., 2003 Intermediate-Temperature Volatility Program
   a. E0 to E10 fuels only
   b. Project complete; final report on CRC website
11) CRC Report No. 648 Coordinating Research Council, Inc., 2006 Hot-Fuel-Handling Program
   a. E0, E5, E10 and E20 fuels
   b. Project complete; final report on CRC website
12) CRC Report No. 652 Coordinating Research Council, Inc., 2008 Cold Start and Warm-up Driveability Program
   a. E0, EIS, E20, and E85 (fuel-flexed vehicles only)
   b. Project complete; final report on CRC website
13) AVFL-13b Fuel Chemistry Impacts of Gasoline/Ethanol Blends in HCCI Single Cylinder Test Engine

a. Low Temperature Combustion (LTC) fuel effects being investigated in a research engine running in HCCI (Homogeneous Charge Combustion Ignition) mode
b. Fuels blended from 4 refinery streams to represent wide range of fuel properties of real world fuels
c. Ethanol effects tested up to E30
d. Testing complete; data analysis in progress

14) AVFL-15 E20 Fuel System and Fuel Component Durability Study
a. E0, E10, and aggressive E20 fuels
b. Aggressive E20 fuel used a modified J1681 design in order to keep sulfur and other parameters within both ASTM 4814 specification and J1681 targets
c. Project testing in progress

Outside Projects/Reports

15) "Market barriers to the uptake of biofuels study: A testing based assessment to determine impacts of a 10% and 20% ethanol gasoline fuel blend on non-automotive engines-2000hrs material compatibility testing." , Orbital Engine Company. (2003, May)
a. Report to Environment Australia.
16) "Issues Associated with the Use of Higher Ethanol Blends (E17-E24)", NREL/TP-510-32206 (October, 2002)
17) "The Effects of E20 on Elastomers Used in Automotive Fuel System Components", Bruce Jones, Gary Mead, Paul Steevens and Chris Connors Minnesota Center for Automotive Research at Minnesota State University, Mankato (Feb., 2008)
a. Contact: Department of Automotive Engineering Technology, Minnesota State University, Mankato
b. ASTM Fuel C, C(E10)A, C(E20)A
18) "The Effects of E20 on Plastic Automotive Fuel System Components", Bruce Jones, Gary Mead, and Paul Steevens, Minnesota Center for Automotive Research at Minnesota State University, Mankato (Feb., 2008)
a. Contact: Department of Automotive Engineering Technology, Minnesota State University, Mankato
b. ASTM Fuel C, C(E10)A, C(E20)A
19) "The Effects of E20 on Automotive Fuel Pumps and Sending Units", Nathan Hanson, Thomas Devens, Colin Rohde, Adam Larson, Bruce Jones, Gary Mead, and Paul Steevens, Minnesota Center for Automotive Research at Minnesota State University, Mankato (Feb., 2008)
a. Contact: Department of Automotive Engineering Technology, Minnesota State University, Mankato
b. ASTM Fuel C, C(E10)A, C(E20)A
20) "The Effects of E20 on Metals Used in Automotive Fuel System Components", Bruce Jones, Gary Mead, Paul Steevens, and Mike Timanus, Minnesota Center for Automotive Research at Minnesota State University, Mankato (Feb., 2008)
a. Contact: Department of Automotive Engineering Technology, Minnesota State University, Mankato
b. ASTM Fuel C, C(E10)A, C(E20)A
21) "Demonstration and Driveability Project to Determine the Feasibility of Using E20 as a Motor Fuel", David Kittleson, Andy Tan, and Darrick Zarling, University of Minnesota, Minneapolis, MN 55414, (Oct. 2007)
a. E0 and E20 fuels

22) "An Examination of Fuel Pumps and Sending Units During a 4000 Hour Endurance Test in E20", Gary Mead, Bruce Jones, Paul Steevens, Nathan Hanson, Joe Harrenstein, Minnesota State University, Mankato, (publication pending)
23) "E20 Effects in Small Non-Road SI Engines", Robert Waytulonis, David Kittleson, and Darrick Zarling, University of Minnesota, Center for Diesel Research, Report to the Minnesota Department of Commerce, (Jan. 2008)
24) "Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1", Brian West, Keith Knoll, Wendy Clark, Ronald Graves, John Orban, Steve Prezesmitzki, Timothy Theis, on behalf of the U.S. Department of Energy, (Oct. 2008)
    a. EO, E10, E15, E20
25) Environmental Protection Agency. (1991, January 24). Regulation of fuels and fuel additives; Definition of substantially similar. Http://www.epa.gov/otaq/regs/fuel/additive/jan91.pdf
26) Sun Refining and Marketing Company. (1998, April). Waiver application for 15% MTBE (EPA Publication No. EN-88-02, Ill-A-1). Washington, DC: U.S. Environmental Protection Agency.
27) "Technical Paper On The Introduction of Greater Than E10-Gasoline Blends", Ranajit Sahu, Outdoor Power Equipment Institute, (June 2007)
28) Proposed Test Plan for Determining the Effect of Mid-grade Ethanol Blends on Handheld Lawn and Garden Engines and Equipment, Ranajit Sahu, Outdoor Power Equipment Institute,(Jan. 2009)
29) "Optimal Ethanol Blend Level Investigation", Richard Shockey, Ted Aulich, Energy & Environmental Research Center, University of North Dakota, Grand Forks, ND, Bruce Jones, Gary Mead, and Paul Steevens, Minnesota Center for Automotive Research, Minnesota State University, Mankato, (Nov. 2007)
30) "Determination of the Potential Property Ranges of E10+ Blends", API
    a. E0, E10, D12.5, E15, and E30 fuels
    b. Base stocks are pump gasolines and BOBs taken from all U.S. PADDs
    c. Fuel analysis in progress

Standards and recommended practices

31) SAE J312: Automotive Gasoline
32) SAE J905: Fuel Filter Test Methods
33) SAE J1297: (R) Alternative Automotive Fuels
34) SAE J1537: Validation Testing of Electric Fuel Pumps for Gasoline Fuel Injection Systems
35) SAE J1681: Gasoline, Alcohol, and Diesel Fuel Surrogates for Materials Testing
36) SAE J1747: Recommended Methods for Conducting Corrosion Tests in Hydrocarbon Fuels or Their Surrogates and Their Mixtures with Oxygenated Additives
37) SAE J1748: Methods for Determining Physical Properties of Polymeric Materials Exposed to Gasoline/ oxygenate Fuel Mixtures
    a. Modifies ASTM D471 to make it fuel-testing specific
38) SAE J1832: Low Pressure Gasoline Fuel Injector
39) SAE J1862: Fuel Injection System Fuel Pressure Regulator and Pressure Damper
40) SAE J2260L Nonmetallic Fuel System Tubing with One or More Layers
41) "A rational approach to qualifying materials for use in fuel systems", Warrendale, PA: Harrigan, M., Banda, A., Bonazza, B., Graham,P., & Slimp, B. Society of Automotive Engineers. (2002).
42) SAE's Automotive Fuels Reference Book (2nd ed., 1995)- RVP Impact of blending ethanol into gasoline

43) ASTM D 256-06 Standard test methods for determining the Izod pendulum impact resistance of plastics
44) ASTM D 412: Vulcanized Rubber and Thermoplastic Elastomers- Tension
45) ASTM D 471: Rubber Property- Effect of Liquids
46) ASTM D 543 Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents
47) ASTM D 618: Standard Practice for Conditioning plastics for Testing
48) ASTM D 638: Standard test method for tensile properties of plastics
49) ASTM D 2240: Standard test method for rubber property-durometer hardness
50) ASTM D 3183: Rubber- Preparation of Product Pieces for Test Purposes from Products
51) ASTM D 4806: Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel
52) ASTM D 4814: Automotive Spark-Ignition Engine Fuel
53) ASTM D 4815: Determination of MTBE, ETBE, TAME, DIPE, tertiary-Amyl Alcohol C_1 to **C4** Alcohols in Gasoline by Gas Chromatography
54) ASTM D 5500: Vehicle Evaluation of Unleaded Automotive Spark-Ignition Engine Fuel for Intake Valve Deposit Formation
55) ASTM Gl: Preparing, Cleaning, and Evaluating Corrosion Test Specimens
56) ASTM G31: Laboratory Immersion Corrosion Testing of Metals
57) Physical Properties of Gasoline/ Alcohol Blends, Bartlesville Energy Technology Center, Department of Energy, Bartlesville, OK, (Sept. 1979)
58) Ethanol Fuel Modification for Highway Vehicle Use, Final Report, Science and Technology Division, Union Oil Co. of California, Brea., (Jan. 1980)
59) "Alcohols and Ethers, A Technical Assessment of Their Application as Fuels and Fuel Components", API Publication 4261, Third Edition, (June 2001)
60) "Determination of the Potential Property Ranges of Mid-Level Ethanol Blends", API, (April 23, 2010)

APPLICATION FOR A WAIVER PURSUANT TO SECTION 211(0(4) OF THE CLEAN AIR ACT FOR E-15

Submitted by

Growth Energy on Behalf of 52 United States Ethanol Manufacturers

In partnership with:

American Coalition for Ethanol
Renewal Fuels Association
National Ethanol Vehicle Coalition

Cellulosic Stakeholders:
Khosla Ventures
Coskata
BioGasol
TMO
Microbiogen
Edenspace
ZeaChem Inc.
Qteros

March 6, 2009

I. Executive Summary

This application is submitted pursuant to Clean Air Act section § 211(f)(4) and requests approval for use of an ethanol-gasoline blend containing up to 15 percent ethanol by volume (hereinafter "E-15") by Growth Energy and the following ethanol manufacturers: Absolute Energy, LLC, Agri-Energy LLC/Dakota Renewable, Amaizing Energy, LLC, Arizona Grain Inc., Arkalon Energy, LLC, Big River Resources, LLC, Cardinal Ethanol, LLC, Castle Rock Renewable Fuels, LLC, Conestoga Energy, DENCO, Didion Ethanol, East Kansas Agri Energy, LLC, Front Range Energy LLC, Golden Grain Energy, LLC, Granite Falls Energy, LLC, Green Plains Renewable Energy, Inc., Hawkeye Renewables LLC, IBEC Ethanol, ICM, Kansas Ethanol, LLC, LifeLine Foods, Inc., Little Sioux Corn Processors, LLC, Marquis Energy, LLC, Nesika Energy, LLC, Patriot Renewable Fuels, LLC, Pinal Energy, POET Biorefining — Alexandria, POET Biorefining — Ashton, POET Biorefining — Big Stone, POET Biorefining - Caro, POET Biorefining — Chancellor, POET Biorefining — Coon Rapids, POET Biorefining — Corning, POET Biorefining Emmetsburg, POET Biorefining — Glenville, POET Biorefining — Gowrie, POET Biorefining — Groton, POET Biorefining Hanlontown, POET Biorefining — Hudson, POET Biorefining — Jewell, POET Biorefining — Laddonia; POET Biorefining — Lake Crystal; POET Biorefining — Leipsic, POET Biorefining — Macon, POET Biorefining — Mitchell, POET Biorefining — Portland, POET Biorefining — Preston, POET Ethanol Products, Prairie Horizon Agri-Energy LLC, Quad County Corn Processors,

Renew Energy, Siouxland Ethanol LLC, Sire, and Western Plains Energy, LLC. The request to allow E-15 is further supported by the additional parties and organizations noted on the cover of this application, Ford Motor Company, and numerous leading scientists that have signed a letter supporting introduction of higher ethanol blend fuels. The applicants and supporters of this application seek accelerated renewable fuel use, increased energy security, enhanced economic development, creation of American jobs, reduced transportation costs, and environmental benefits from increased use of ethanol through approval of up to a fifteen percent base blend of ethanol. Importantly, recent and extensive research demonstrates that use of higher ethanol blends will significantly benefit the environment by reducing greenhouse gas emissions,[2] reducing harmful tailpipe emissions,[3] reducing smog,[4] using less energy for an equivalent amount of fuel[5], and protecting natural resources.[6]

See February 20, 2009 Letter from Susan M. Cischke of Ford Motor Company to Jeff Broin of POET noting that "Ford endorses efforts to increase base level blends up to E-15 and collaborate with key stakeholders to overcome challenges with introducing these higher levels of ethanol in the base fuel blend used by all vehicles in the near term."

See, e.g., Improvements in Life Cycle Energy Efficiency and Greenhouse Gas Emissions of Corn-Ethanol, by Adam J. Liska et. al. ("Nebraska Study") (Yale Journal of Industrial Ecology, January 2009) at 9 (demonstrating, on a life-cycle basis, that corn-based ethanol production and use reduces greenhouse gas emissions 48-59 percent compared to
gasoline production and use); *Greenhouse Gas Impacts of Expanded Renewable and Alternative Fuels Use,* EPA Office of Transportation and Air Quality, EPA420-F-07-035 (April 2007) (finding that cellulosic ethanol production and use will reduce greenhouse gas emissions by more than 90 percent compared to gasoline).

[3] *See* sections IV through VI *infra.*

Ethanol-blended fuels generally, and E-15 specifically, reduce vehicle tailpipe emissions of carbon monoxide and volatile organic compounds, both of which are smog-

Pursuant to the Clean Air Act, the Administrator of the Environmental Protection Agency ("EPA") may grant a waiver allowing use of a fuel additive upon application by a fuel manufacturer that establishes that use of the fuel additive "will not cause or contribute to the failure of any emission control device or system." This application seeks approval to increase the ethanol portion of the ethanol-gasoline blend to up to fifteen percent. Extensive experience with use of ethanol-gasoline blends, similarities of E-15 to ethanol-gasoline blends containing ten percent ethanol (hereinafter "E-10"), and multiple recent studies involving a range of ethanol and gasoline fuel blends at fifteen percent ethanol and higher

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forming emissions. *See* section IV *infra.* Ethanol has been the preferred fuel to meet Clean Air Act reformulated gasoline requirements to reduce ozone and many states credit ethanol-blend gasoline with significantly reducing urban ozone levels. The American Lung Association of the Upper Midwest similarly credits ethanol-blend fuels with reducing smog and has embraced ethanol-blend fuels as part of its Clean Air Choice Initiative. Clean Air Choice website, *available at* http://www.cleanairchoice.org/news/.

[5] The U.S. Department of Agriculture reports a net energy balance for ethanol production of 1.67 on average. By contrast, the U.S. Department of Energy reports that gasoline refining has a negative energy balance and every unit of energy expended in its production results in just 0.79 energy units in the form of gasoline. *The 2001 Net Energy Balance of Corn-Ethanol,* prepared by U.S. Department of Agriculture and Agricultural Research Service (2001); *The Complete Lifecycle Energy Picture,* prepared by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (2005).

Increased substitution of gasoline with ethanol will better protect natural resources by reducing the need to drill for oil in environmentally sensitive areas, such as oceans, critical habitats, and wildlife refuges. Ethanol has low toxicity, is miscible with water, is easily biodegraded in the environment greatly reducing the potential for contamination of surface and ground water compared to oil and gasoline, and produces fewer air emissions when used than gasoline. *See, generally,* Glenn Ulrich, Ph.D., "The Fate and Transport of Ethanol-Blended Gasoline in the Environment" (Oct. 1999, prepared for the Governors' Ethanol Coalition), *available at* www.n1c.state.ne.us/epubs/E5700/B055- 1999 .pdf

support that use of E-15 will not cause or contribute to the failure of any emission control device or system.

Ethanol has been widely used in the United States as a gasoline component as a fuel extender due to gasoline shortages,[7] as an effective octane booster (to prevent early ignition, or "engine knock"), and as an oxygenate (to prevent air pollution from carbon monoxide and ozone). Congressional amendments to the Clean Air Act have encouraged the widespread use of ethanol as a fuel additive, including the Reformulated Gasoline Program ("RFG"),[8] the Oxygenated Gasoline Program,[9] and the Renewable Fuels Standard ("RFS").[1°] E-10 ethanol-gasoline blends have been approved by EPA for more than 30 years, and since 1980, more than 44.5 billion gallons of fuel ethanol have been produced in the United States,'

In fact, ethanol has been used as fuel in the United States for over a century: Henry Ford's Model T was designed to run on either gasoline or ethanol. *Renewable Energy Has An icon: Henry Ford,* ASSOCIATED PRESS, Thurs., Oct. 12, 2006.

8 The RFG program requires the sale of "reformulated" gasoline in numerous areas to reduce pollutants, specifically those that contribute to ground level ozone, better known as smog. *See* Clean Air Act, § 211(k). Reformulated gasoline that meets the performance criteria set by the CAA can be reformulated in a number of ways, including the addition of oxygenates to the gasoline. Ethanol has been the primary source of oxygenates used under the RFG program.

9 This program requires the sale of oxygenated motor fuels during the winter months in certain major metropolitan areas to reduce carbon monoxide pollution. *See id. §* 211(m). As with the RFG program, ethanol has been the primary source of oxygenates for this program.

I° This national program imposes requirements with respect to the amount of renewable fuel produced and used. *See id. §* 211(o). The Energy Independence and Security Act of 2007 modified the required amounts of renewable fuel to 7.5 billion gallons by 2012, rising to 36 billion gallons by 2022.

1' Renewable Fuels Association website, *at* http://www.ethanolrfa.org.

the vast majority of it (over ninety-nine percent) blended to form E-10 and used in all types of vehicles and engines.

E-15 is similar in composition to E-10. The sole difference between E-10 and E-15 is the addition of five percent more ethanol in place of gasoline. E-15, like E-10, is comprised primarily of gasoline and the chemical composition of the gasoline and ethanol used in both fuels is the same. E-10 and E-15 have essentially identical lead and sulfur levels.[12] The additional ethanol in E-15 results in approximately five percent fewer hydrocarbons and two percent more oxygen in the blended fuel than E-10.[13] The volatility of the two fuels also is essentially identical:[4]

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[12] Based on ASTM D 4806 Standard Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Fuel, the quality of the ethanol used to produce E-10 and E-15 should be identical.

[13] By calculation, the reduction in hydrocarbons should be equal to the hydrocarbons in the gasoline that ethanol displaces. The increase in oxygen content is arrived at by calculation based on the assumption that the same ethanol quality, denaturant (content and composition) and moisture content are used with E-10 and E-15.

[14] *Issues Associated with the Use of Higher Ethanol Blends (E17-E24),* prepared by National Renewable Energy Laboratory (October 2002) ("NREL Study") at 11-13. As the NREL Study explains, ethanol on its own has a low volatility (as measured by Reid Vapor Pressure or "RVP") of 2.3 psi, compared to 7-15 psi for motor gasoline. However, in some ethanol blends, blending ethanol with gasoline does not lower vapor pressure, but instead causes the blend's RVP to increase. The increase in RVP is highest at about five volume percent ethanol, raising the RVP slightly over 1 psi from the level of the original 9 psi of the base gasoline. However, as ethanol content increases, the increase in RVP falls gradually. In a 20 vol. % blend, the volatility is lower than a 5 vol. % blend. *Id.* The result of this curve is that the volatility of E-10 and E-15, measured by RVP, are almost identical, with the intervening blends showing a very slight rise and fall in RVP. For example, Table 3-1 in the NREL Study gives the following volatility levels for ethanol blends between E-10 and E-20: E-10 (9.15 psi), E-12 (9.28 psi), E-14 (9.19 psi), E-17 (9.06 psi), and E-20 (9.02 psi).

E-15 also is similar in performance to E-10. Recent and extensive studies by federal and state government agencies and private groups have evaluated the use of a range of ethanol-gasoline fuel blends. These recent studies are discussed in sections IV through VII below and included in the Appendix to this application. Virtually all of these studies have been undertaken for ethanol-gasoline blends that have an ethanol content of at least E-15, and the majority of studies have evaluated ethanol-gasoline fuel blends at ethanol concentrations higher than fifteen percent. While ongoing studies are anticipated to support use of ethanol-gasoline fuel blends containing twenty percent ethanol or more, the similarity of E-10 to E-15 and studies that have been completed to date provide information necessary for approval of the requested E-15 waiver. As summarized in the application below, available data and multiple recent studies regarding the impact of various intermediate blends on emissions, materials compatibility, durability, and driveability were completed on extensive and representative test fleets, provide a reliable comparison to certification conditions, and demonstrate that use of E-15 will not cause or contribute to a failure of any emission control device or system to meet its certification emissions standards. In sum, these studies find no statistically significant difference in performance between not only E-10 and E-15, but also between E-10 and E-20, which confirms the similarities of ethanol-gasoline blends with less than twenty percent ethanol, and provides further assurance through testing at higher ethanol concentrations that E-15 will not cause or contribute to the failure of emission control devices or systems.

Significantly, not only are today's vehicles capable of successfully using E-15, existing fuel dispensation infrastructure in use for decades with E-10 is similarly capable of dispensing E-15. Underwriters Laboratories ("UL"), which independently tests and certifies products, including automotive fuel dispensers, expressly supports the use of existing UL listed fuel dispensation infrastructure with automotive fuel containing up to a maximum of fifteen percent ethanol. [15] The data UL has gathered as part of the organization's ongoing research to investigate the impact of using higher ethanol blends in fuel dispensing systems supports that existing dispensers may be used successfully with ethanol blends up to E-15.

Accordingly, based on the similarity of E-10 to E-15 and recent and extensive work completed by governmental and private third-party researchers, and the results of those studies that are included as part of this application, Growth Energy and the ethanol manufacturers that submit this application request EPA grant the requested waiver.

[15] Press Release, Underwriters Laboratories Announce Support For Authorities Having Jurisdiction Who Decide To Permit The Use Of Existing UL Listed Gasoline Dispensers With Automotive Fuel Containing Up To A Maximum Of 15% Ethanol (February 19, 2009), *available at* http://www.ul.com/newsroorn/newsrel/nr021909.html. Indeed, UL certification has long defined the term "gasoline" as gasoline with up 15 percent ethanol: "[t]he term "gasoline" includes gasoline with small amounts of additives such as detergents, solvents for detergents, and anti-icing chemicals and gasoline with up to 15 percent ethanol or methyl tertiary butyl ether (MTBE)." UL 330, Hose and Hose Assemblies for Dispensing Flammable Liquids, at 111.1. *See also* UL 25, Meters for Flammable and Combustible Liquids and LP-Gas, at 111.2 (defining "Flammable and Combustible Liquids" as including "gasoline/alcohol blends up to 15% Ethanol."); UL 79, Power-Operated Pumps for Petroleum Dispensing Products, at 111.5 (defining "Petroleum Products" as including "gasoline/alcohol blends up to 15% Ethanol.").

H. Requested Wavier

This application seeks a waiver pursuant to Clean Air Act section 211(f)(4) for the introduction into commerce of an alcohol-gasoline blend containing up to fifteen percent ethanol[6] by volume in unleaded gasoline ("E-15").

III. Statutory Authority and Standard for Approval of Requested Waiver

Title H of the Clean Air Act (42 U.S.C. §§ 7521-7590) establishes a comprehensive scheme for regulation of motor vehicle emission and fuel standards for the prevention and control of air pollution. 42 U.S.C. § 7545 ("Section 211" of the Clean Air Act), part (f)(1)(B) provides that effective upon November 15, 1990, it shall be unlawful for any manufacturer of any fuel or fuel additive to first introduce into commerce, or to increase the concentration in use of, any fuel or fuel additive for use by any person in motor vehicles manufactured after model year 1974 which is not substantially similar to any fuel or fuel additive utilized in the certification of any model year 1975, or subsequent model year, vehicle or engine under section 206 of the Act.

Under section 211(0(4) of the Clean Air Act, the Administrator of the EPA may waive this prohibition where the Administrator determines that an applicant has established that the fuel or fuel additive, and the emission products thereof, will not cause or contribute to a failure of any emission control device or system

16 For purposes of this application the term "ethanol" shall refer to the definition of "ethanol" contained in ASTM D 4806 Standard Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Fuel.

(over the useful life of the motor vehicle, motor vehicle engine, non-road engine or non-road vehicle in which such device or system is used) to meet its certification emissions standards.[17] By statute, EPA must take final action to grant or deny an application for a section 211(f)(4) waiver, after public notice and comment, within 270 days of the receipt of such an application.[18]

EPA guidelines[19] and past EPA waiver decision documents, as well as court decisions regarding waivers under section 211(0(4), provide guidance as to the appropriate content of waiver applications and the standard and scope of EPA's review of such applications. Based on the foregoing, a waiver request should contain "data relating to a fuel additive's emissions effects which are derived from vehicle testing," and the data should provide a "reliable basis for comparison with the conditions under which vehicles are certified."[20] Where an applicant does not have sufficient test data, the applicant may instead provide a reasonable theory which predicts the emission effects of an additive, and need only conduct a sufficient amount of testing to demonstrate the validity of such a theory.[21] In addition to presenting data on emissions, a waiver application should include information regarding the proposed fuel's compatibility with materials used in

[17] Clean Air Act, § 211(0(4), 42 U.S.C. 7545(0(4).

[18] *Id.*

[19] Guidelines for Fuel Additive Waivers, 43 Fed. Reg. 11,258 (Mar. 17, 1978); Guidelines for Section 211(0 Waivers for Alcohol-Gasoline Blends, 43 Fed. Reg. 24,131 (June 2, 1978).

[20] Guidelines for Fuel Additive Waivers, 43 Fed. Reg. 11,258, 11,259 (Mar. 17, 1978).

21 Texaco; Grant of Application for Fuel Waiver for TC-11064, Decision Document, 45 Fed. Reg. 58,954, 58,956 (1980).

carburetors or fuel systems to demonstrate that the fuel will not impair the materials to the point that emissions are adversely affected.[22] Similarly, applications should include information regarding a vehicle's driveability on the waiver fuel to better ensure that emissions control devices or systems will not be removed or rendered inoperative because of their impact on performance.[23]

In evaluating a waiver request, EPA may "look at all of the available data, including data provided by persons other than the applicant"[24] as well as preexisting studies.[25] Federal case law indicates that waiver decisions are to be "based on one criterion: a fuel additive's effect on emission standards," and EPA's role is "to assess whether the additive's emission products 'causes or contributes' to an emission control device's ability to comply with the Act's emission standards."[26] Emissions increases below applicable emissions standards and emission of non-regulated compounds are not relevant to the waiver process.[27]

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[22] *See, e.g.,* Sun Refining and Marketing Co.; Conditional Grant of Application for Fuel Waiver for 15% MTBE, Decision Document, 53 Fed. Reg. 33,846 (Sept. 1, 1988).

[23] Guidelines for Fuel Additive Waivers, 43 Fed. Reg. 11,258, 11,259 (Mar. 17, 1978).

[24] Petro-Tex Chemical Co., Denial of Application for Fuel Waiver for MTBE (0-15%), Decision Document, 44 Fed. Reg. 1447, 1447 n.2 (1978).

[25] *See, e.g.,* Gas Plus, Inc.; Grant of Application for Fuel Waiver for 0-10% Anhydrous Ethanol ("Gasohol"), Decision Document, 44 Fed. Reg. 20,777 (April 6, 1979).

[26] *Ethyl Corp. v. EPA,* Si F.3d 1053, 1058 (D.C. Cir. 1995).

[27] *id.* (holding that EPA Administrator exceeded her authority by denying waiver application on basis of public health concerns); *see also Motor Vehicle Mfrs. Ass'71 of U.S. v. EPA,* 768 F.2d 385, 390 (D.C. Cir. 1985) ("[B]oth the plain language of the Act and its legislative history support the EPA's view that the Administrator is not required under section 211(0(4) to adopt a "no increase" standard and may grant a waiver as long as the fuel does not cause or contribute to a failure to achieve compliance with emission standards."). *See also* Petro-Tex Chemical Co., Denial of Application for Fuel Waiver

Recognizing that it would be "virtually impossible" to test all vehicles and emission control systems, EPA and the courts have long recognized that statistical sampling and emissions evaluations based on a representative fleet are sufficient to support that a fuel under consideration for a section 211(0(4) waiver would not cause or contribute to a significant failure of emission standards by vehicles in the national fleet.[28]

IV. Recent Comprehensive Studies Support The Requested E-15 Waiver.

Recent, significant, and comprehensive studies involving over one-hundred vehicles, eighty-five vehicle and engine types, and thirty-three fuel dispensing units have been completed to evaluate the affects of ethanol-gasoline blends above ten percent ethanol, including, specifically, E-15 and blends as high as E-85. These studies include a yearlong driveability test and over 5,500 hours of materials compatibility testing. In direct support of this waiver application, Growth Energy submits the following recent scientific studies that collectively demonstrate that use of E-15 will not cause or contribute to the failure of any

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for MTBE (0-15%), Decision Document, 44 Fed. Reg. 1447 (1978) (stating waiver provision is "solely concerned with the emission standards").

[28] ARCO; Grant of Application for Fuel Waiver for Arconol (TBA, 0-7%), Decision Document, 44 Fed. Reg. 10,530 (Feb. 21, 1979); *Motor Vehicle Mfrs. Ass'n,* 768 F.2d at 392 (agreeing with EPA that "actual 50,000-mile durability testing may not be always required to make the requisite determination that a fuel will not cause a vehicle to exceed emission standards over its useful life").

emission control device or system to meet its certification emissions standards:

1. *Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Report 1,* prepared by Oak Ridge National Laboratory for the U.S. Department of Energy (October 2008) ("DOE Study") (peer-reviewed report studied the effects of E-15 and E-20 on motor vehicles and small non-road engines and concluded that when E-15 and E-20 were compared to traditional gasoline, there were no significant changes in vehicle tailpipe emissions, vehicle driveability, or small non-road engine emissions as ethanol content increased);
2. *Optimal Ethanol Blend-Level Investigation, Final Report,* prepared by Energy & Environmental Research Center and Minnesota Center for Automotive Research for American Coalition for Ethanol (October 2007) ("ACE Study") (report studied the effects of ethanol blends ranging from E-10 to E-85 on motor vehicles and found that exhaust emissions levels for all vehicles at all levels of ethanol blend were within the applicable Clean Air Act standards);
3. *The Feasibility of 20 Percent Ethanol Blends by Volume as a Motor Fuel,* Executive Summary, Results of Materials Compatibility and Driveability Testing, prepared by the State of Minnesota and the Renewable Fuels Association (RFA) (March 2008) ("Minnesota Compatibility/Driveability Study: Executive Summary")
    a. *The Effects of E20 on Metals Used in Automotive Fuel System Components* ("Metals Study") (study compared the effects of E-0, E-10 and E-20 on nineteen metals and found that the metals tested were compatible with all three fuels);
    b. *The Effects of E20 on Elastomers Used in Automotive Fuel System Components* ("Elastomers Study") (study compared the effects of E-0, E-10 and E-20 on eight elastomers and found that E-20 caused no greater change in properties than E-0 or E-10);
    c. *The Effects of E20 on Plastic Automotive System Components* ("Plastics Study") (study compared the effects of E-0, E-10 and E-20 on eight plastics and found that there was no significant difference in the properties of the samples exposed to E-20 and E-0);
    d. *The Effects of E20 on Automotive Fuel Pumps and Sending Units* ("Fuel Pumps Study") (study compared the effects of E-0, E-10 and E-20 on the performance of twenty-four fuel pumps and nine sending units and found that E-20 has similar effect as E-10 and E-0 on fuel pumps and sending units);

e. *Demonstration and Driveability Project to Determine the Feasibility of Using E20 as a Motor Fuel* ("Driveability Study") (study tested forty pairs of vehicles on E-0 and E-20 and found no driveability or operational issues with either fuel)

(Collectively, "Minnesota Compatibility/Driveability Study");

4. *Fuel Permeation from Automotive Systems: E-O, E-6, E-10, E-20 and E-85,* prepared by the Coordinating Research Council, Inc. (CRC Report No. E-65-3) (December 2006) ("CRC Permeation Study") (study evaluated effects of E-0, E-6, E-20 and E-85 on the evaporative emissions rates from permeation in five newer California vehicles and found that there was no statistically significant increase in diurnal permeation rates between E-6 and E-20);

5. *Report to the US Senate on E-20 Ethanol Research,* prepared by the Rochester Institute of Technology (October 2008) ("RIT Study")[29] (study evaluated effects of E-20 on ten legacy vehicles; initial results after 75,000 collective miles driven found no fuel-related failures or significant vehicle problems and documented reductions in regulated tailpipe emissions when using E-20 compared to E-0);

6. *Use of Mid-Range Ethanol/Gasoline Blends in Unmodified Passenger Cars and Light Duty Trucks,* prepared by Minnesota Center for Automotive Research (July 1999) ("MCAR Study") (one-year study evaluated the effects of E-10 and E-30 in fifteen older vehicles in "real world" driving conditions; found no effect on driveability or component compatibility from either fuel and found that regulated exhaust emissions from both fuels were well below federal standards);

7. *Blending of Ethanol in Gasoline for Spark Ignition Engines: Problem Inventory and Evaporative Measurements,* prepared by Stockholm University et. al. (2004-05) ("Stockholm Study") (study tested and compared evaporative emissions from E-0, E-5, E-10, and E-15 and found lower total hydrocarbon emissions and lower evaporative emissions from E-15 than from E-10 and E-5).

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[29] The RIT Study is a draft summary of results to date in an ongoing study of E-20 fuel vehicle driveability, vehicle exhaust, and vehicle maintenance in gasoline vehicles owned and operated by Monroe County, New York.

V. Testing with E-I5 Demonstrates Both That It Has No Significant Effect On Regulated Emissions As Compared To E-0 And That It Will Not Cause Or Contribute To The Failure Of Any Emission Control Device Or System To Meet Applicable Certified Emissions Standards.

Recent comprehensive studies make clear that use of E- 15 will not have a significant effect on regulated emissions or cause the failure of any emission control device or system. Specifically, the recent DOE Study provides results from a broad testing program initiated by the U.S. Department of Energy ("DOE"), in partnership and consultation with various other organizations including the Coordinating Research Council ("CRC") and the EPA, to evaluate the impacts of using E-15 and E-20 in vehicles and other engines. The DOE study submitted with this application tested conventional vehicles and small non-road engines ("SNREs") for regulated exhaust emissions, exhaust and catalyst temperatures, SNREs engine components temperature, and observable operational issues. Significantly, for the purposes of this application, the DOE Study found that for conventional vehicles, "regulated tailpipe emissions remained largely unaffected by the ethanol content of the fuel."[30]

The DOE Study was designed to determine the extent to which ethanol in fuel has an immediate effect on regulated emissions, selected aldehyde emissions, and fuel economy for the "average" light-duty vehicle. DOE designed its test procedures and vehicle samples with guidance and consultation from EPA.[31] A

30 DOE Study at xvii. 3 I

Id. at xvi, 2-2.

fleet of sixteen test vehicles[32] was selected, after a 2007 national database characterization, to include vehicles from four groups of emission regulation requirements (based on age) reflecting a range of engine sizes and manufacturers, and including several of the highest selling vehicle models and several models considered most likely to be sensitive to ethanol content in gasoline.[33] This fleet of test vehicles thus provided a good representation of the national fleet likely to use E-15 pursuant to a waiver.

Each vehicle was tested on four fuels of varying ethanol content, E-0, E-10, E-15 and E-20, and emissions were determined using the LA92 drive cycle[34] (on EPA's recommendation).[35] The test parameters thus allowed for a reliable comparison with the conditions under which the test vehicles have been certified. Once the test results were obtained, they were statistically analyzed to determine whether sufficient evidence existed in the data to conclude that ethanol concentrations of up to twenty percent in the fuel changed emissions or fuel economy, either when averaged across all vehicles or for a majority of vehicles.

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[32] Results from thirteen of the vehicles are reported in the DOE Report; results from the other three vehicles are expected in 2009.

[33] DOE Study at 2-2 to 2-4.

[34] "LA92 Drive Cycle" refers to the California Air Resources Board LA92 Dynamometer Driving Schedule. It was developed as an emission inventory improvement tool using 1992 test data from Los Angeles. Compared to the Federal Test Procedure (FTP 75), the LA92 has a higher top speed, a higher average speed, less idle time, fewer stops per mile, and a higher maximum rate of acceleration (generally representing a more aggressive urban driving style).

[35] DOE Study at 2-2. *See* Appendix A of the DOE Study for a detailed discussion of the test equipment, procedures, and emissions standards used.

The DOE study concluded that regulated tailpipe emissions remained largely unaffected by the ethanol content of the fuel. More specifically, no statistical differences were seen among all ethanol blends regarding emissions of non-methane organic gases ("NMOG"), non-methane hydrocarbons ("NMHC"), carbon monoxide ("CO"), and oxides of nitrogen ("NO_x").[36] When the higher ethanol blends were compared to E-0, the following statistical differences in regulated emissions were noted: (1) at a ninety-five percent confidence level, lower NMHC at E-10 and E-20 and lower CO at E-10 and E-15; and (2) at a ninety percent confidence level, lower NMHC at E-15 and lower CO at E-20.[37] The following chart from the DOE Study displays these results[38]:

Estimated change (% or mg/mi in emissions and fuel economy relative to E0 with ±95% confidence limit

Emission (unit)	E-10	E-15	E-20
NMOG (%)	-3.99 1 7.90	4.23 14.76	1.78 ± 10.40
NMHC (%)	-10.09 9.89[a]	-11.85 1 12.20[b]	46.19 ± 10.79'
CO (%)	44.87 A: 8.20[a]	43.52 110.72·	-12.58 ± 13.67[b]
NOx (%)	-3.61 ± 20.87	-1.78 ± 22.43	12.96 f 17.41
Fuel economy (%)	-3.88 ± 0.51"	-5.03 1.21'	-7.72 1 1.11[a]
Ethanol (ng/ini)	2.31 ± 1.51'	5.43 .1 2.38'	6.76 2.87[a]
Acetaldehyde (ing/mi)	0.21 .1 me	0.39 1 0.1?	0.45 1 0.13'
Formaldehyde (ng/mi)	0.1140.47.	0.08 E 0.08[b]	0.09 ± 0.10[h]

a Statistically significant at the 95% confidence level (shaded).

b Marginally significant at the 90% confidence level.

36 DOE Study at 3-1.

37 *Id.* at 3-1. *See* DOE Study, section 3, for a detailed explanation of the findings. Similarly, a study published by the Society of Automotive Engineers International (SAE) examined the influences of ethanol fuel on spark engine emissions and concluded that ethanol results in a reduction of NOx and THC emissions as compared to E-0 and that "ethanol is an effective fuel for lowering exhaust emissions." *The Effect of Ethanol Fuel on a Spark Ignition Engine,* SAE Technical Paper No. 2006-01-3380, at 7 (2006).

38 DOE Study at 3-3, Table 3.1.

The DOE Study also includes emissions data for SNREs that further supports this waiver request. The DOE Study compared regulated emission levels from a comprehensive and nationally representative fleet of twenty-eight SNREs fueled by E-0, E-10, E-15, and E-20 (providing a reliable comparison to certification conditions). The study found that overall, regulated emissions are generally no worse with E-15 (or E-20) than with E-0.[39] Accordingly, for the purposes of this waiver request, the DOE Study provides sufficient data to establish, for vehicle exhaust emissions, that E-15 does not cause or contribute to a failure of any emission control device or system to meet its certified emissions standards.

The ACE Study, also included as part of this application, further supports this conclusion. The primary objective of the ACE Study was to investigate a fuel economy-based optimal ethanol blend level[°] as well as to acquire Highway Fuel Economy Test ("HWFET") tailpipe emission data for all the ethanol-blend fuels surveyed. For this purpose, eight different ethanol blends were used — E-10, E-20, E-30, E-40, E-50, E-60, E-70, and E-85.[41] Fuel economy and emission testing was performed by the Minnesota Center for Automotive Research ("MCAR") using a

[39] *Id.* at xix, 3-19 to 3-20.

[40] As determined by the Highway Fuel Economy Test ("HWFET"), at which measured miles per gallon is greater than predicted based strictly on per-gallon fuel Btu content. ACE Study at iv.

[41] *See* ACE Study at 3 for a more detailed description of the fuels used in this study.

California Analytical Instruments dilution system to measure vehicle tailpipe emissions.[42]

The ACE Study found that exhaust emissions levels for all vehicles at all levels of ethanol blend, obtained from both the FTP-75 and the HWFET driving cycles, were within the applicable Clean Air Act standards.[43] Because the ACE study included testing at lower and significantly higher ethanol blends than E-15 and produced emissions within applicable limits, it is expected that E-15 will render analogous results and satisfy all emission standards.[44]

This conclusion is consistent with emissions testing conducted on another higher blend, E-30, as part of a 1999 study conducted by MCAR.[45] The MCAR Study evaluated the effects on fuel economy, emission characteristics, driveability, and component compatibility of in-use light duty vehicles running on blends of thirty percent and ten percent ethanol. The tests included fifteen vehicles of

[42] This system includes five specific parts: the SuperFlow AC motor-driven chassis dynamometer, the critical flow venturi, the drive cycle and driver's trace monitor, the FTP-75 driving cycle and the HWFET driving cycle, and the gas analyzers.

[43] ACE Study at 18-21. There was one exception: the flex-fuel Chevrolet Impala exceeded the NMOG standard for the FTP-75 on E-20 and Tier 2 gasoline at 0.120 grams/mile and 0.152 grams/mile, respectively.

[44] *See* Gas Plus, Inc.; Interpretation of Grant of Application for Fuel Waiver for 0-10% anhydrous ethanol ("gasohol"), 47 Fed. Reg. 14,596 (Apr. 5, 1982) (concluding, on the basis of ethanol's chemical properties, that waiver approval of E-10 also applied to all blends between E-0 and E-10).

[45] *Use of Mid-Range Ethanol/Gasoline Blends in Unmodified Passenger Cars and Light Duty Trucks,* prepared by Minnesota Center for Automotive Research (July 1999) ("MCAR Study").

various makes and models, ranging in model years from 1985 to 1996.[46] MCAR measured exhaust emission levels of HC, CO and NO_x for E-10 and E-30 fuels in accordance with EPA test procedures.[47] The study revealed no significant difference in emissions when comparing the vehicles fueled with E-10 and E-30 and, consistent with the ACE Study, found emission levels from both fuels were low and below applicable federal standards.[48]

Accordingly, the results of both the ACE Study and the MCAR Study are consistent with the DOE Study and further support that intermediate ethanol blends, including E-15, do not significantly affect regulated vehicle exhaust emissions.

Available information also supports that no long-term emissions increases will result from use of E-15. Consistent with past agency decisions, long-term exhaust emissions testing (50,000-Mile durability testing) is not necessary for approval of the requested waiver. For example, in the decision document granting Sun Refining's waiver for fuel containing up to fifteen percent methyl tertiary butyl ether ("MTBE") in unleaded gasoline, EPA determined that 50,000-mile durability testing was not required because the agency was "unaware of any long-

[46] MCAR Study at 2.

[47] All the MCAR tests run on the dynamometer were based on the Federal Test Procedure as described in the Federal Register Part 86, Subpart B.

[48] MCAR Study at 7.

term deteriorative effects on exhaust emissions associated with oxygenates."[49] EPA explained that "[t]he vast majority of data indicate that the effect of oxygenates on exhaust emissions over time has not been a significant issue."[50] EPA noted that "reasonable theoretical judgments as to the emission effects of the fuel may be utilized as an alternative to direct testing of vehicles" and that fuel volatility specifications, limited durability emissions testing, and data regarding materials compatibility and driveability could be considered in making such judgments.[51] This approach was upheld by the United States Court of Appeals for the District of Columbia.[52]

Based on emissions testing completed as part of the DOE, ACE and MCAR studies, materials compatibility studies completed as part of the Minnesota Compatibility/Driveability Study (and discussed in detail in section VI below), and E-15's compositional similarities to E-10, the effect of which upon long-term emissions is well known and has been widely considered acceptable for thirty

[49] Sun Refining and Marketing Co.; Conditional Grant of Application for Fuel Waiver for 15% MTBE, Decision Document at 13, 53 Fed. Reg. 33,846 (Sept. 1, 1988).

[50] *Id.* at 14; *see also* ARCO; Grant of Application for Fuel Waiver for Arconol (TBA, 07%), Decision Document, 44 Fed. Reg. 10,530 (Feb. 21, 1979) (granting waiver for fuel containing up to 7% of the oxygenate tertiary butyl alcohol and determining that that 50,000-mile durability testing was not required because, "upon examination of the available data on material compatibility and the chemistry of Arconol," a reasonable estimate of the test vehicle's emissions performance on Arconol can be obtained using back-to-back emission test data").

[51] *Id.* at 10-11.

[52] *Motor Vehicle Mfrs. Ass'n of U.S. v. EPA*, 768 F.2d 385, 392-93 (D.C. Cir. 1985).

years, E-15 is not anticipated to result in any adverse changes in regulated long-term emissions.

This conclusion is further directly supported by a recent study by the Rochester Institute of Technology. The RIT Study examined the effects of E-20 (as compared to E-0) on ten legacy vehicles with significant mileage (between 30,000 and 120,000 miles), which together consumed 5,000 gallons of E-20 fuel over 75,000 miles of driving under real world conditions. Exhaust emissions testing was conducted in accordance with FTP-75 standards with state-of-the-art testing equipment, including specialized vehicle and engine emissions equipment.

Specifically, the RIT Study showed the following significant results for vehicles using E-20 (as compared to E-0):

- CO emissions decreased in nine of the ten vehicles tested, and all vehicles fell well within the EPA full useful life standards for the individual vehicle requirements;
- Average tailpipe NO_x emissions decreased by 2.4 percent, with all vehicles well below EPA's NO_x requirements;
- Average total hydrocarbons emissions decreased 13,7 percent, with nine of ten vehicles decreaing the THC.[53]

Accordingly, the RIT Study results are consistent with the ACE, MCAR, and DOE studies and further support that intermediate ethanol blends, including E-15, do not significantly affect regulated vehicle exhaust emissions on a short-term or long-term basis. Consistent with EPA's prior conclusions that ethanol as an

[53] The RIT Study also summarized the effects of the use of E-20 on vehicle driveability and vehicle maintenance during this initial phase and found no fuel-related failures or significant vehicle problems. RIT Study at 1.

oxygenate is unlikely to have " long-term deteriorative effects on exhaust emissions," and based on extensive emissions and materials compatibility testing that demonstrates that blends up to E-20 will not have a significant deteriorative effect on applicable vehicle parts, EPA has sufficient information to grant this waiver.

Based on the similar volatility of E-10 to E-15 and the results of recent studies, E-15 also is not anticipated to result in any discernable increase in any evaporative emissions compared to commercially available fuels and may, in fact, result in fewer evaporative emissions. This conclusion is supported by two recent studies that evaluated the effect of higher ethanol blends upon evaporative emissions.

A December 2006 study by the Coordinating Research Council found that there was no statistically significant increase in diurnal permeation" rates between E-6 and E-20.[55] The study tested five newer California vehicles using six ethanol blends: E-0, E-6 (5.7% ethanol), E-6Hi (5.7% ethanol with increased aromatics content), E-10, E-20 and E-85. Of the five vehicles, two were from 2000 and

[54] CRC Permeation Study at 2. The CRC Permeation Study explains that there are three mechanisms responsible for evaporative emissions: permeation from automotive systems, leaks (liquid and vapor), and fuel tank venting (canister losses). *Id* at 1. Of these, permeation is the most relevant to understanding the effect of ethanol on evaporative emissions. This is because ethanol's effect on leaks and fuel tank venting is unlikely to vary from that of non-ethanol-gasoline. Leaks are an anomaly and "not thought to be sensitive to gasoline composition," and gasoline vapor release due to ethanol via non-permeation mechanisms such as fuel tank venting is countered by lowering the RVP of the base gas. *Id.* at 62

[55] *Id.* at 2.

2001 (Rigs 1 and 2) subject to a 2.0 gram/day diurnal emissions standard, and two were newer "near zero" and "zero" vehicles (Rigs "11" and "12") with enhanced evaporative emissions technology, subject to California's "LEV H" requirements (which dropped the limits to 0.5 g/day for a three-day diurnal and 0.65 g/day for the two-day test).[56] The fifth vehicle was a recent "flex fuel" vehicle (Rig "14"). The tests were conducted using the Sealed Housing for Evaporative Determination ("SHED") method for evaporative emissions.

All of the vehicles, when using any of the ethanol fuel blends, met the standard for which the vehicle had been cert ified.[57] Importantly, the testing also confirmed no statistically significant increase in evaporative emissions between E-6 and E-10 or betw een E-10 and E-20.[58] This information indicates that evaporative emissions from E-15, like E-20, should be no worse than those of widely available commercial fuels and within applicable emissions limits.[59]

An additional study prepared by the University of Stockholm ("Stockholm Study")[60] further supports that E-15 will have the same or lower evaporative

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[56] *Id.* at 5. "

Id. at 17.

[58] *Id.* at 2.

[59] E-6 (in fact, E-5.7 in this study) contains approximately 2% oxygen and is thus considered a "substantially similar" for which no waiver is required. *See* 73 Fed. Reg. 22277, 22281 (Friday April 25, 2008). Likewise, E-10 has been allowed by waiver for 30 years. *See* Gas Plus, Inc.; Grant of Application for Fuel Waiver for 0-10% anhydrous ethanol ("gasohol"), Decision Document, 44 Fed. Reg. 20,777 (Apr. 6, 1979).

[60] *Blending of Ethanol in Gasoline for Spark Ignition Engines: Problem Inventory and Evaporative Measurements,* prepared by Stockholm University et al (2004-05) ("Stockholm Study") at 4. At the time of the study, all gasoline sold in Sweden contained

emissions than commercially available fuels. The Stockholm Study found that E-15 had lower evaporative emissions of total hydrocarbons than both E-10 and E-5.

The Stockholm Study included SHED testing of evaporative emissions from two "summer" gasoline fuels, with Reid Vapor Pressures of approximately 9.14 psi and 10.15 psi, respectively,[61] which were blended with varying percentages of ethanol: 0%, 5%, 10% and 15%, for a total of eight different fuel blends. For reference purposes, E-85 also was measured.[62] All tests were performed at the AVL MTC Motor Test Centre in Haninge, Sweden[°] using a VT Shed[64] gas-proof test container normally used for testing whole cars.[65] The test procedure involved placing a specially prepared fuel container containing the particular blend being tested into the VT Shed, leaving it sealed in the VT Shed for a two hour period at a consistent temperature of forty degrees Celsius, and

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five percent ethanol, with approximately 65,000 m^3 produced domestically (from wheat and cellulose) and around 165,000 m^3 imported from Brazil. *Id.* at 7.

[61] The RVPs of the base fuels used in the study were expressed in metric units as 63 kPa and 70 kPa, respectively. *See Id.* App. 2 at 6 and 7 for detailed specifications of the base fuels.

[62] *Id.* App. 2 at 3.

[63] *Id.* App. 2 at 5. The AVL MTC test center is an accredited laboratory for automotive testing that has been in operation for approximately fifteen years. The center has experience of more than ten years of testing for the Swedish Environmental Protection Agency and the Swedish National Road Administration.

[64] *Id.* App. 2 at 5. This container is called a "VT shed" as both its volume and temperature are controlled.

[65] *Id.* The VT Shed includes a F lame Ionization Detector ("FID") for measuring the total emitted hydrocarbons. This instrument, along with an air sense mass spectrometer, was used for the Stockholm Study's evaporative emission tests.

measuring the change in concentration over time of total hydrocarbons as well as selected specific hydrocarbons.

The study found that with both base fuels (9.14 psi and 10.15 psi), the E-15 blends had fewer evaporative emissions of total hydrocarbons than the corresponding E-10 and E-5 blends.[66] The study also tested for specific hydrocarbons. When blended with the 10.15 psi base fuel, E-15 had fewer evaporative emissions of benzene, butane, toluene, and xylene, when compared to E-10 and E-5.[67] Similarly, when blended with the 9.14 psi base fuel, E-15 had fewer evaporative emissions of these same compounds when compared to E-5, and fewer evaporative emissions when compared to E-10 for all but toluene and xylene, for which the E-15 emissions were minimally greater.[68] Finally, the study measured the Reid Vapor Pressure for each fuel blend tested and found that E-5, E-10 and E-15 had similar vapor pressures.[69]

Taken together, the CRC Permeation Study and the Stockholm Study demonstrate that the evaporative emissions of E-15 will be lower or no greater than those of commercially available fuels such as E-10 and E-5, and will be within applicable emissions limits.

Further, and consistent with past agency practice, to ensure no increases in evaporative emissions above applicable standards, Growth Energy proposes that

[66] *Id.* App. 2 at 10.

[67] *Id.* App. 2 at 11-19.

[68] *Id.* App. 2 at 16.

[69] *Id.* App. 2 at 19.

this waiver be granted with a condition requiring E-15 to conform to ASTM fuel volatility specifications for the area and time of year where it is used. EPA has repeatedly granted section 211(0(4) waivers without requiring any testing for evaporative emissions,[7°] For example, in considering the waiver application by Synco 76 for E-10 plus a proprietary stabilizer, EPA granted the waiver without any evaporative emissions testing, stating: "controlling the volatility of the finished fuel within ASTM volatility specifications should adequately control evaporative emissions, and they should be no worse than those of commercially available fuels."[71] EPA also has consistently stated that it "would be discriminatory to require the applicant's fuel to meet a more stringent volatility limit in order to control evaporative emissions than is characteristic of commercially available fuels."[72]

[7°] *See, e.g.,* ARCO; Grant of Application for Fuel Waiver for Arconol (TBA, 0-7%), Decision Document, 44 Fed. Reg. 10,530, 10,532 (Feb. 21, 1979) (approving waiver without SHED testing where ARCO demonstrated that when Arconol-fuel conforms to ASTM volatility specifications its evaporative emissions performance is "no worse than the evaporative emissions of the commercially available fuels of similar volatility"); ARCO; Grant of Application for Fuel Waiver for MTBE (0-7%), 44 Fed. Reg. 12,242, 12,245 (1979); Sun Refining and Marketing Co.; Conditional Grant of Application for Fuel Waiver for 15% MTBE, Decision Document, 53 Fed. Reg. 33,846 (Sept. 1, 1988) (finding no SHED testing required when Sun: (1) conducted limited testing and found that fuels blended with its additive will have final volatility characteristics similar to present commercially available gasoline; and (2) Sun agreed to have the final fuel conform to ASTM fuel volatility standards); ARCO; Grant of Application for Fuel Waiver for Methanol/GTBA (up to 3.5% oxygen), Decision Document, 46 Fed. Reg. 56,361 (1981).

[71] Synco 76 Fuel Corp.; Grant of Application for Fuel Waiver, Decision Document at 9, 47 Fed. Reg. 22404 (1982).

[72] *See, e.g.,* Synco 76 Fuel Corp.; Grant of Application for Fuel Waiver, Decision Document at 9, 47 Fed. Reg. 22404 (1982).

Based on the similar volatility of E-10 to E-15, recent testing regarding evaporative emissions for E-15 and for blends with an even greater percentage of ethanol than E-15, and recent materials compatibility testing, no increase in evaporative emissions is anticipated. Accordingly, and consistent with past agency decisions, EPA may grant this waiver based on the information provided in this application.

VI. E-15 Is Compatible With Materials Such That It Will Not Cause Or Contribute To The Failure Of Vehicles To Meet Applicable Certified Emissions Standards.

Recent studies conclusively support that E-15 will not impair the materials used in fuel systems to the point that emissions are adversely affected. The Minnesota Compatibility/Driveability Study supports that even at ethanol concentrations as high as E-20 there are no materials compatibility problems for automotive or fuel dispensing equipment. The Minnesota Compatibility/Driveability Study examined the effect and performance of E-20 on a wide variety of motor vehicle engines and engine components. The study generated four separate and distinct materials compatibility reports (and one driveability report, discussed in section VII below) regarding metals (the "Metals Study"), elastomers (the "Elastomers Study"), plastics (the "Plastics Study"), and common fuel sending unit and fuel pump combinations (the "Fuel Pumps Study") that are currently used in automotive, marine, small engine and fuel system

dispensing equipment." The study used nationally recognized standards, including Society of Automotive Engineers ("SAE") and American Society of Testing and Materials ("ASTM"), as recommended by both automotive and fuel industry experts.[74] The E-20 and E-10 test fuels selected for the research were specifically formulated to present a worst-case-scenario fuel (using "aggressive ethanol"[75]) that would still be acceptable under applicable fuel standards. Together, the four materials compatibility reports conclude that E-20 results in no problems for automotive or fuel dispensing equipment.

The Metals Study compared the effects of E-0, E-10 and E-20 on nineteen metals selected for the study following reference to literature reviews and manuals, recommendations from fuel systems and engine manufacturers, and peer review by system engineers from several Original Equipment Manufacturers ("OEMs") and Tier I and II suppliers (suppliers to OEMs). The metals samples were prepared using SAE and ASTM standards and exposed to E-0, E-10, and E-20 fuel at an elevated temperature for 2,016 hours. Eighteen of the nineteen metals tested were found to be compatible with all three fuels and did not show

[73] Materials used in fuel systems of Flex Fuel Vehicles ("FFV") were accepted as proven compatible and not included in this study.

[74] Minnesota Compatibility/Driveability Study: Executive Summary at 2.

[75] The "aggressive ethanol" used in the study contained impurities found in fuel grade ethanol including sulfuric acid, acetic acid, water, and sodium chloride in the following proportions: synthetic ethanol 816.00 g, de-ionized water 8.103 g, sodium chloride 0.004 g, sulfuric acid 0.021 g, and glacial acetic acid 0.061 g.

signs of pitting, loose corrosion by-products in the test fuel, or have a mass loss that exceeds a rate that would cause a failure within a twenty-year life cycle.[76]

The Elastomers Study compared the effects of E-0, E-10 and E-20 on eight elastoiners selected for the study following reference to literature reviews and manuals, recommendations from fuel systems and engine manufacturers, and peer review by system engineers from several OEMs and Tier I and I I suppliers. The elastomer samples were prepared using SAE and ASTM standards and exposed to E-0, E-10, and E-20 fuel at an elevated temperature for 500 hours. The study measured several properties of the elastomer samples, including volume, weight, appearance, tensile strength, ultimate elongation, and hardness. In a subs tantial majority of cases, E-20 caused no greater change in properties than E-0 or E-10.[77] Where a greater change in properties was caused by E-20, the study concluded that the magnitude of the change was not great enough to represent a concern.[78] In sum, the differences between E-0, E-10, and E-20 were small and statistically insignificant.

The Plastics Study compared the effects of E-0, E-10 and E-20 on eight plastics selected for the study following reference to literature reviews and

76 Metals Study at 8. The study considers and minimizes the finding regarding one metal found to be incompatible, Zamak 5. The Zamak samples used in the study were not plated — as it often is to increase corrosion resistance for fuel applications — which is believed to be a reason for the corrosion problems found in the study and not found on automobiles being used with E-10. *Id.*

77 Elastomers Study at 10.

78 *Id.*

manuals, recommendations from fuel systems and engine manufacturers, and peer review by system engineers from several OEMs and Tier I and II suppliers. The plastics samples were prepared using SAE and ASTM standards and exposed to E-0, E-10, and E-20 fuel at an elevated temperature for 3,024 hours. The study analyzed several properties of the plastics samples, including mass loss/gain, volume, tensile strength, tensile elongation, and impact resistance. The study concluded that there was no significant difference in the properties of the samples exposed to E-20 and E-10.[79]

Finally, the Fuel Pumps Study compared the effects of E-0, E- 10 and E-20 on the performance of twenty-four fuel pumps and nine sending units. The fuel pumps were selected to include a variety of manufacturers, model years, and common pump designs representative of those used in a high volume of vehicles currently making up today's automotive fleet. The sending units were similarly selected; however, fewer sending units were necessary due to the similarity in design in the manufacture of sending units. The study found that E-20 has a similar effect as E-10 and E-0 on fuel pumps and sending units.[80] In total, these materials compatibility studies demonstrate that the effects of blended fuel

[79] Plastics Study at 7-8.

[80] Fuel Pumps Study at 4.

containing up to twenty percent ethanol present no problems for current automotive or fuel dispensing equipment.[81]

VII. E-15 Will Result in No Difference In Driveability As Compared to E-O

Recent studies also support that E-15 will result in no difference in driveability compared to E-O. The Driveability Study presents data to support that E-15 will cause no driveability issues and will not lead to "removal or rendering inoperative of [emissions control] devices or systems" based on negative impacts on performance.[82]

The Driveability Study tested a fleet of forty pairs of vehicles in which one vehicle of each pair was fueled with E-O and the other E-20.[83] The vehicles were driven for a full calendar year by lay drivers, each of whom recorded driver logs.

[81] In fact, evidence shows that blended fuels containing up to eighty-five percent ethanol present no problems for fuel dispensing equipment and engine components. The American Coalition for Ethanol fueled a regular, non-FFV vehicle (a 2000 Chevy Tahoe) on E-85 for 98% of the 105,496 miles driven before disassembly and inspection of the fuel dispensing equipment and engine components. An examination of these parts showed normal or better than normal wear than similar or identical parts used in a vehicle with high-80,000 mileage fueled on non-E-85 fuel. No engine parts or emission control devices were rendered inoperable by the use of E-85 (or otherwise) in the Chevy Tahoe. Video: American Coalition for Ethanol, *available at* http://www.ethanol.org/video. *See also, Use of Mid-Range Ethanol/Gasoline Blends in Unmodified Passenger Cars and Light Duty Trucks,* prepared by Minnesota Center for Automotive Research (July 1999) (finding no materials compatibility problems after testing E-30 on fifteen in-use cars and light duty trucks with model years ranging from 1985 to 1996).

[82] Guidelines for Section 211(f) Waivers for Alcohol-Gasoline Blends, 43 Fed. Reg. 24,131, 24,132 (June 2, 1978).

[83] Driveability Study at 4.

Additionally, each vehicle was tested quarterly (once each season: fall, winter, spring, summer) by trained driveability raters using industry standard driveability tests.[84]

The Driveability Study found that E-20 provided similar power and performance to E-0 throughout the year and that the test fleet operated satisfactorily on both E-0 and E-20 with no obvious differences between the fuels.[85] In fact, maintenance records of the forty vehicles fueled by E-20 showed only two instances of vehicle operability failure during the study, neither of which were deemed to be fuel-related. Accordingly, the Driveability Study supports that fuel blends up to E-20 present no driveability concerns with respect to this E-15 waiver request.

The RIT Study also supports the Minnesota's Study's driveability findings. The RIT Study examined the effects of E-20 (as compared to E-0) on ten legacy vehicles with significant mileage (between 30,000 and 120,000 miles), which together consumed 5,000 gallons of E-20 fuel over 75,000 miles of driving under real world conditions.[86] Tested vehicles were equipped with a wireless vehicle management system that provided real-time connection to the engine control unit and maintenance information including diagnostic trouble codes.[87] The RIT

[84] *Id.* at 5.

[85] *Id.*

[86] RIT Study at I.

[87] *Id.* at 5.

Study found that the tested vehicles ran as well or better on E-20 than on E-0.[88] Significantly, the study found that no malfunction (check engine) light illuminated and drivers did not detect any performance degradation. As for engine part durability, the study found no fuel or engine part failures and no abnormal maintenance was required. In sum, the vehicles "operated normally" when fueled with E-20.[89]

The MCAR Study achieved similar results after a driveability analysis of fifteen in-use cars and light duty trucks, with manufacturing dates ranging from 1985 to 1996, operating on E-10 and on E-30.[90] Over the duration of MCAR's one-year study, study participants recorded data on cards with choices of words and phrases, which could be used to best describe abnormal performance. The Study reported no driveability complaints, no reports of cold starting, vapor lock, or hard starting conditions, and no reports of hesitation with the E-30 blend of fuel.[91]

The DOE Study[92] also supports the findings of the Minnesota Study, the RIT Study, and the MCAR Study. The DOE Study found no operability or

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[88] *Id.* at 4-5.

[89] *Id.* at 5.

[90] *Use of Mid-Range Ethanol/Gasoline Blends in Unmodified Passenger Cars and Light Duty Trucks,* prepared by Minnesota Center for Automotive Research (July 1999) at 7.

[91] *Id.*

[92] *Effects of Intermediate Ethanol Blends on Legacy Vehicles and Small Non-Road Engines, Study 1,* prepared by Oak Ridge National Laboratory for the U.S. Department of Energy (October 2008).

driveability issues with any of the ethanol blends used in that study, including E-15 and E-20.[93] In the relevant part, the study found:

- None of the vehicles displayed a malfunction indicator light as a result of the ethanol content in the fuel;
- No fuel filter plugging symptoms were observed;
- No cold start problems were observed in 75F and 50F laboratory conditions; and
- No fuel leaks or conspicuous degradation of the fuel systems were observed.[94]

The DOE Study also supports that use of E-15 will not have a discernable impact on the performance and operability of SNREs. The DOE Study tested a range of SNREs to "full useful life" on E-0, E-10, E-15, and E-20 to determine how engine operation changed over time with exposure to various levels of ethano1.[95] The DOE Study concluded that it is not possible to isolate the effects of ethanol on the operability of SNREs because of the great variance in performance among SNREs, regardless of the fuel used, and concl uded that no obvi ous materials compatibility issues were observed during testing.[96]

[93] DOE Study at xviii.

[94] *Id.*

[95] *Id.*

[96] *Id.* at xix.

VIII. Conclusion.

This waiver request includes recent comprehensive independent third-party studies by both governmental and private groups. This data builds on existing studies and over thirty years' experience with use of ethanol-gasoline fuel blends.[97] Recent studies included in this application include data regarding exhaust emissions and evaporative emissions, materials compatibility and vehicle driveability based on use of ethanol-gasoline blends for both E-15 as well as for blends with significantly higher ethanol content than E-15. Information provided in this application and available data makes clear that E-15 will not cause or contribute to the failure of any emission control device or system and supports EPA approval of the requested waiver.

[97] *See e.g., Review of Prior Studies of Fuel Effects on Vehicle Emissions,* prepared by Coordinating Research Council, Inc. (CRC Report No. E-84) (August 2008).

GROWMARK

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September 7, 2010

Ms. Jonelle Brent
Illinois Department of Agriculture
P.O. Box 19281
Springfield, IL 62794-9281

Dear Ms. Brent:

We need to prepare our existing infrastructure and standards for likely changes to blending specifications of renewable fuels. Congress passed laws requiring that 36 billion gallons of renewable fuel be used annually by 2022 in the Renewable Fuels Standard (RFS) in the Energy Policy Act of 2005, and expanded the RFS in the Energy Independence and Security Act of 2007. The RFS provides incentives for investment in the production and infrastructure of biofuels to reduce America's use of fossil fuels and dependence on foreign oil. Accelerated renewable fuel use required by the RFS also guarantees that higher fuel blends will be essential to meet the goals.

NIST Handbook 130 §2.1.2 specifies that Gasoline-Oxygenate Blends shall contain no more than 10 volume percent ethanol. Recently the Renewable Fuels Association, (RFA) submitted Form 15 to the National Conference of Weights and Measures suggesting the removal of the limit to 10 percent ethanol content while proposing replacement wording for consideration. RFA's proposal read such that blends "…shall contain no more than the maximum proportion of ethanol authorized by United States Environmental Protection Agency (U.S. EPA) under Section 211 of the Clean Air Act."

RFA's proposal recognizes U.S. EPA's authority to allow new fuel and fuel additives to be approved for use while providing specific guidance to the states by providing clear expectations for these new fuel and fuel additives. As you know, U.S. EPA currently is considering a March 2009 waiver application pursuant to Clean Air Act §211(f)(4) to blend ethanol with gasoline up to 15 percent (i.e., E15). If the EPA approves this waiver, as it stands NIST Handbook 130 would prevent gasoline marketers from introducing E15 into commerce.

We urge you to advocate passage of this proposed amendment in an effort to broaden the authorized proportion of ethanol for model regulations.

Sincerely,

Charles J. Spencer

Charles J. Spencer
Director Government Affairs
Phone: 309-557-6343/Fax: 309-557-7279
E-mail: cspencer@growmark.com

CS/jw

cc: Tom Jennings, Director, Illinois Department of Agriculture







September 14, 2010

Jonelle Brent
Illinois Department of Agriculture
PO Box 19281
Springfield, IL 62794

Dear Jonelle:

The U.S. Congress established the Renewable Fuels Standard (RFS) in the Energy Policy Act of 2005, and expanded the RFS in the Energy Independence and Security Act of 2007, requiring that 36 billion gallons of renewable fuel be used annually by 2022. The RFS provides meaningful incentives for investment in the production and infrastructure for biofuels in the U.S. to reduce America's use of fossil fuels and dependence on foreign oil. Accelerated renewable fuel use required by the RFS also guarantees that higher fuel blends will be essential. Therefore, we need to prepare existing infrastructure and standards for progressive changes to blending specifications.

NIST Handbook 130 §2.1.2 specifies that Gasoline-Oxygenate Blends shall contain no more than 10 volume percent ethanol. Recently the Renewable Fuels Association submitted Form 15 to the National Conference of Weights and Measures suggesting the removal of the limit to 10% ethanol content while proposing replacement wording for consideration. RFA's proposal read such that blends

> *"...shall contain no more than the maximum proportion of ethanol authorized by United States Environmental Protection Agency (U.S. EPA) under Section 211 of the Clean Air Act."*

RFA's proposal recognizes EPA's authority to allow new fuel and fuel additives to be approved for use while providing specific guidance to the states by providing clear expectations for these new fuel and fuel additives. As you know, EPA currently is considering a March 2009 waiver application pursuant to Clean Air Act §211(f)(4) to blend ethanol with gasoline up to 15 percent (i.e., E15). If the EPA approves this waiver, the current NIST Handbook 130 would prevent gasoline marketers from introducing E15 into commerce.

We urge you to advocate passage of this proposed amendment in an effort to broaden the authorized proportion of ethanol for model regulations.

Sincerely,

Tim Lenz, President
Illinois Corn Growers Assn

Raymond E Defenbaugh
Illinois Renewable Fuels Assn

Philip Nelson, President
Illinois Farm Bureau

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Appendix G

Item 237-6: Handbook 130, Engine Fuels and Automotive Lubricants Regulation

Section 3.13. Oil

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Presentation from Dennis Bachelder, API's Engine Oil Licensing and Certification System

Good morning. I am Dennis Bachelder from API's Engine Oil Licensing and Certification System, and I want to thank the Chair and members of the Northeastern Weights and Measures Association Law and Regulations Committee for this opportunity to recommend a change to Handbook 130 section 3.13.1, Labeling of Vehicle Motor Oil.

Handbook 130 has for many years required that labels on motor oil packages identify the oil's SAE viscosity and API performance level. Both of these items are important pieces of information for vehicle owners and operators and maintenance personnel entrusted with the responsibility of selecting the right motor oil for a car or truck.

While section 3.13.1 continues to meet this need for motor oil packages, it does not address bulk motor oils, the manner by which many motor oils are distributed and installed today. Over the last two decades, the distribution and installation of motor oils has undergone a radical change, shifting from a do-it-yourself process with oil installed by vehicle owners from bottles to a do-it-for-me system where the oil is installed by service providers from tanks filled by distributors. According to Kline and Company, do-it-for-me installed more than 60 percent of passenger car motor oil last year. Consumers who once scrutinized motor oil labels in auto parts stores before installing them in their cars or trucks now travel to auto dealers, quick lubes, or service centers and wait while their vehicle's oil is changed with motor oil from a bulk oil tank. These consumers might be selecting a specific oil for their vehicle, but many are probably trusting that the service provider is installing a quality bulk oil recommended for their car or truck. API samples and tests motor oils purchased from bulk oil installers annually, and I can say that this is often the case. However, API has also found the opposite to be true. Bulk oil installers don't always know the identity of the oil in their tanks, and in some cases they actually consciously or unconsciously misrepresent what they're installing. More than once API sampling has found installers claiming they are dispensing one brand of oil when in fact they are installing another brand. To complicate matters further, many times the customer receipt does not identify what's been installed. Imagine how many of these types of transactions occur every day.

The changes proposed for Handbook 130 are intended to apply the labeling requirements for packaged motor oils to oils sold in bulk. These changes as proposed would require motor oil manufacturers and distributors to identify the oils they deliver and installers the oils they dispense. Requiring distributors to identify the motor oils they deliver to installers will help ensure that installers know what they're dispensing, and requiring installers to do the same on their invoices will provide the same level of information for consumers.

I urge the Laws and Regulations Committee of the Northeastern Weights and Measures Association to amend Handbook 130 section 3.13.1 as API has proposed.

Presentation from Kevin Ferrick, Manager of API's Engine Oil Licensing and Certification System

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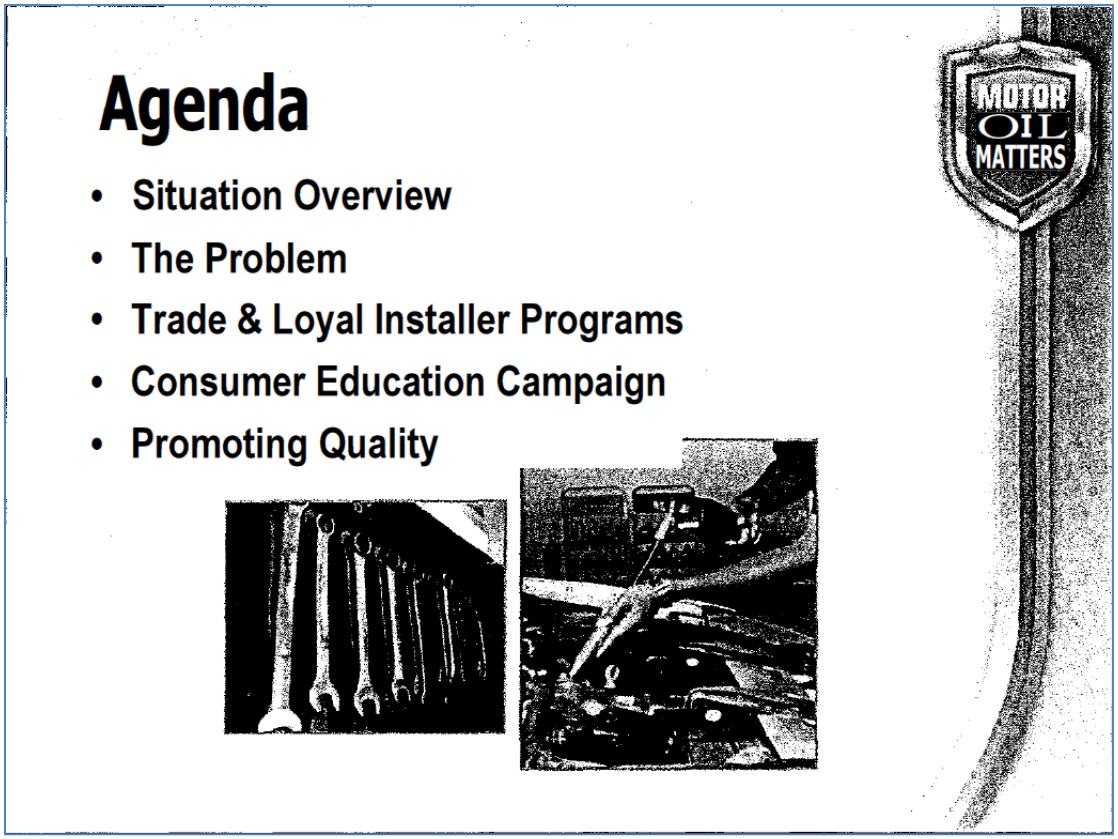
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MOTOR
OIL
MATTERS
ELIZABETH BOEHM-MILLER
Marketing Manager, Shell

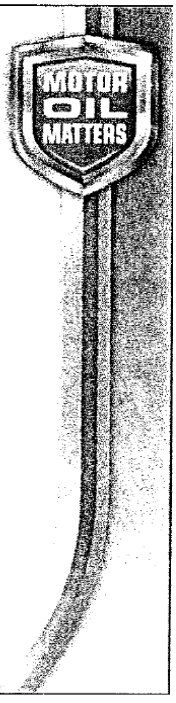

Agenda
• Situation Overview
• The Problem
• Trade & Loyal Installer Programs
• Consumer Education Campaign
• Promoting Quality
MOTOR
OIL
MATTERS

Situation Overview

- **Today's Realities**
  - **— Recession is driving negative behavior**
    - **Demand is causing some customers to buy cheap oils**
    - **Some installers involved with deceptive trade practices**
      - **Advertising one brand while selling another**

The problem

- **Installers are stealing volume by masquerading as PQS-branded facilities**
- **Estimated loss of $58 min nationally in PQS sales revenue**
- **Its an industry issue — see NOLN articles**
- **Violates Federal and State Laws**
- **Creates unfair advantage in marketplace**
- **Erodes consumer confidence and trust**
- **Introduces potential liability through engine warranty or claim issues**

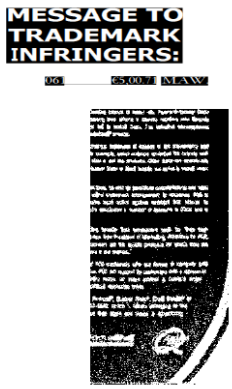


Pennzoil annual gallons lost —6 min

Quaker State annual gallons lost —2 min

Customers Matter to Shell

- Conducting Local Market Events
- Created Comprehensive programs to support installers
  - — Trade activities
    - Legal actions
    - Publicizing efforts
    - Enhanced sales training
    - New Installer Programs
    - Product Quality Testing
    - Certified Installers



Shell is protecting consumer and our brands, but also how we want to help protect installers business, the consumers (our joint end-users)
developed a comprehensive, two-pronged program designed to support our loyal installers.
The first phase, which is and will remain out of consumer view, is our aggressive focus on combating trade deception:

- We are taking aggressive legal action: pursing the installers misrepresenting the brands
- Escalating efforts to investigate & file lawsuits against violators
- Legal actions range from sales rep counseling to filing law suits
- Won those awarded damages, signs are coming down — successfully concluded 10 lawsuits — settled in Shell's favor
- filing an additioanl 10 lawsuits, with investigations underway
- Conducted several 50+ investigations regions spanning across the US
- Legal activity is resource intensive and takes time to get the results we are committed to pursuing blatant offenders
- We are publicizing our activities & intentions through advertorials in NOLN, Motor Age
- Brand enforcement initiatives have been developed such as signage policies & procedures. Installers desiring to feature Pzl QS brands with permanent signage they will be required to fulfill purchase requirements & these are requirements will be enforced.

Quality does Matter



- Brands like Shell, Pennzoil, Quaker State
  - —Invest in R&D
  - —Partner w/ OEMs & NASCAR teams
  - —Offer strong claims backed by 300k mile warranty
- All oils are NOT the same — proved w/ quality testing
  - —53% of PLs off spec or tested poorly
  - —Low temp flow 32%
  - —Volatility 11%
  - —High metals 21%
  - —Shear stability 11%

Most oils contain several additives and base oils to do all the things needed in an engine - high quality oils even go further to provide added value.

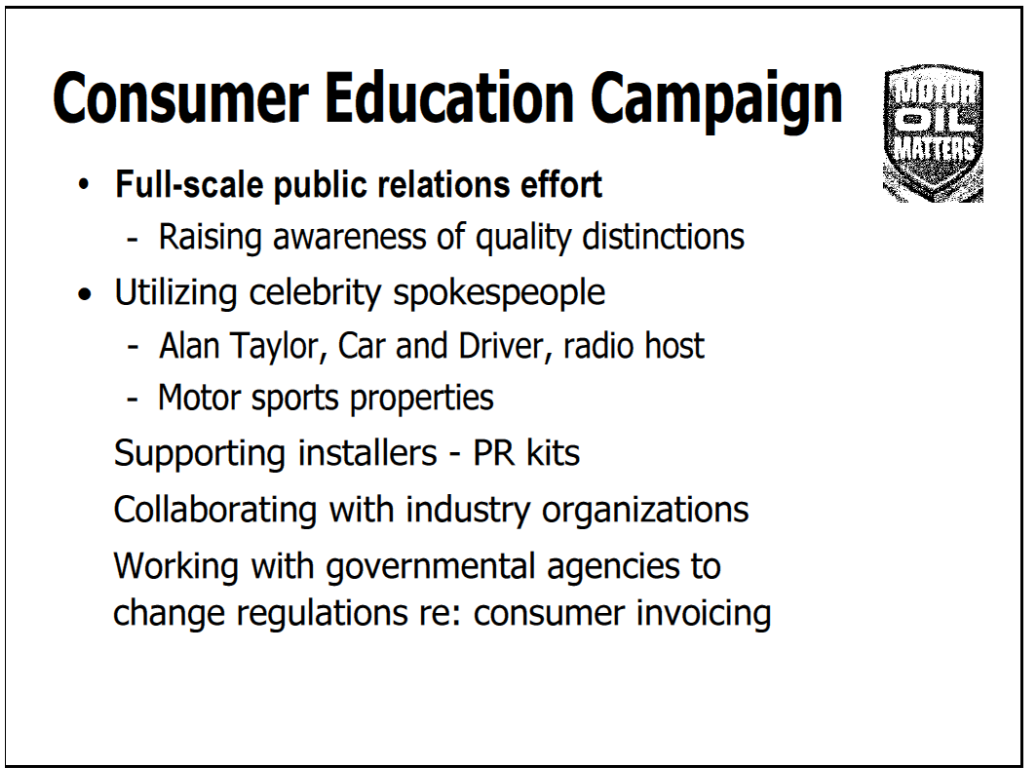
Using the wrong oil, or even an oil that admittedly does not meet requirements, will void the warranty and leave the engine exposed to potential problems.

Shell invests A LOT in knowing how to build high quality oils. With research centers around the world and continuous learning from taxi fleets (5mln miles annually) and professional racing

We tested some low-quality oils — 53% were off spec or tested poorly.

If you look at some of the off brand oils in the marketplace, you'll notice that some admittedly don't meet the latest industry specifications. Even more, some of the off brands we tested failed to meet some of the basic requirements for the latest industry specifications.

area of concern: we tested oils with poor volatility. In high temperatures, lower quality motor oil with poor volatility could be more prone to evaporate and generate an oily mist, which can dirty other parts of your engine and exhaust system.



Our second phase is designed to educate consumers and to provide our loyal installers, with tools and programs designed to help them stand out in the eyes of consumers:

we launched the certified installer program. It's an additional way for consumers to identify installers as a trusted facility that pour quality, branded motor oils

To help educate consumers about the value of quality, branded motor oils and the vital role they play in keeping their cars running right — an especially important topic considering today's economic situation and the realities of people holding on to their existing cars longer — we've created MotorOilMatters.org, - is a web site we've designed as an educational site for consumers to better understand the differences in motor oils. This interactive site will educate consumers about the vital role quality, branded motor oils play in the longevity and performance of their vehicles, and will also help drive consumers to our loyal installers via links to installer locators. For now, this site is our site, however, we are also working with trade and industry organizations to create a consortium for the cause and to expand the information and offerings on this site.

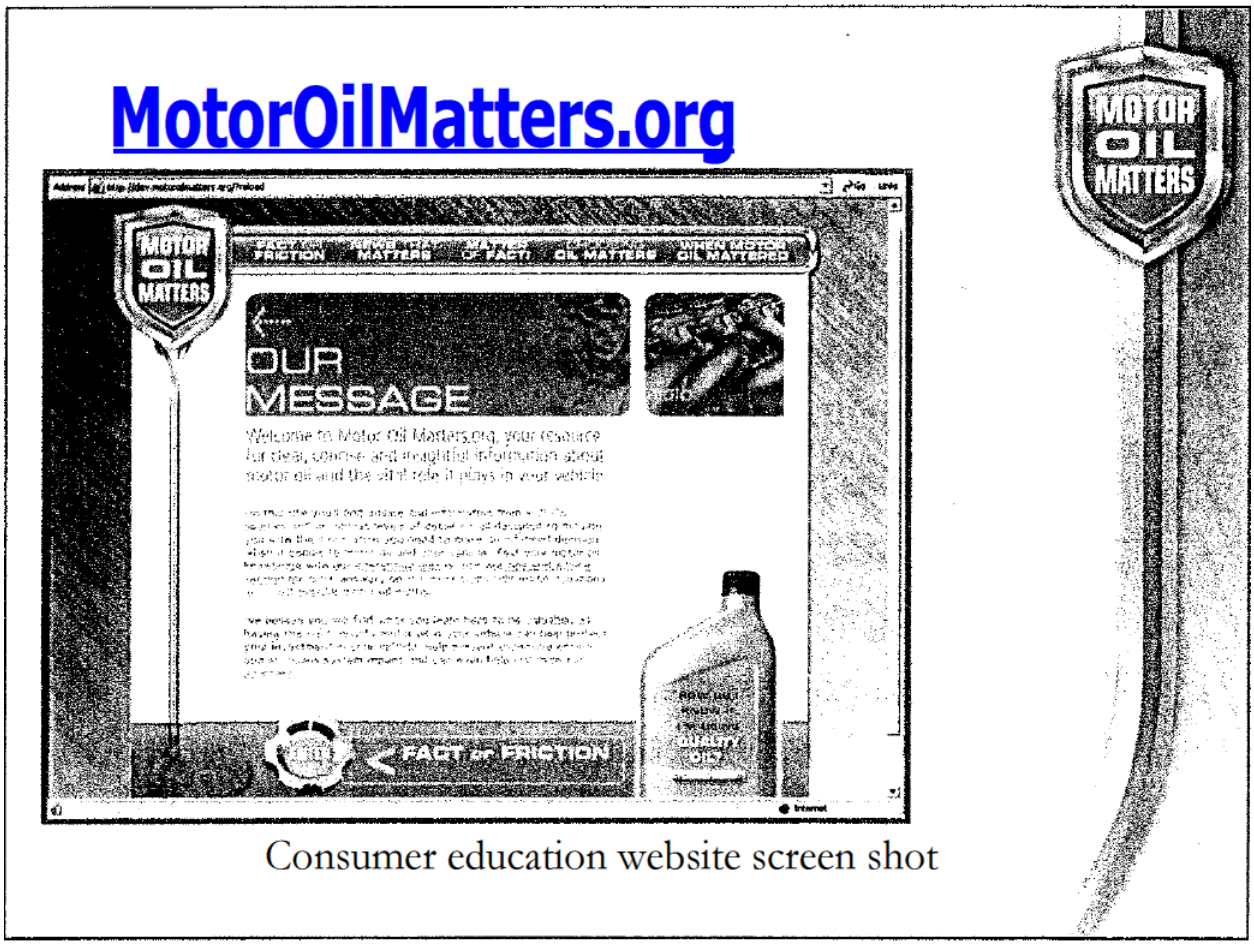
We are also launching a public relations effort surrounding each of the motor oil matters tours to promote the differences in motor oils message and the web site a source for information on the benefits of quality branded motor oils in each market.

importance of consumers to do the right thing by their car and ask specifically for quality, branded motor oils like Pennzoil or Quaker State at a reputable, trustworthy installer.

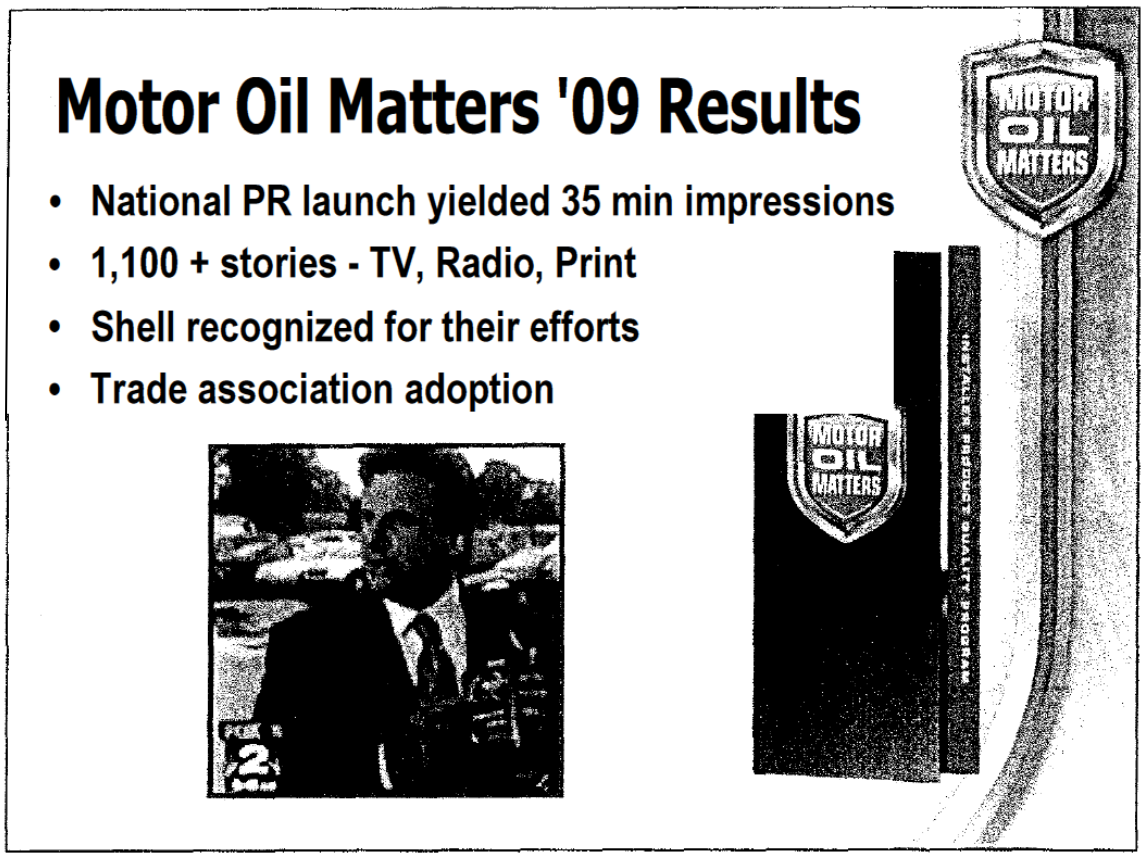
We are utilizing other celebrity spoke people, like Alan Taylor — car & drive radio, Bill Goldberg, motor sports personalities

Created PR kits for our installers to help spread the motor oil matters message

Connecting with groups like API and ILSAC to join forces to spread the quality message



Consumer education website screen shot



Shell established a leadership position — is viewed as a leader in this area

established Shell as leader — jobber world "first it was Shell announcing clamping down on quality..." Tom Glenn

Lube Report/Lubes & grease — great article — Luis interview as a result of MOM launch — now just this week — publisher noted our efforts — Shell Slams motor oil shams

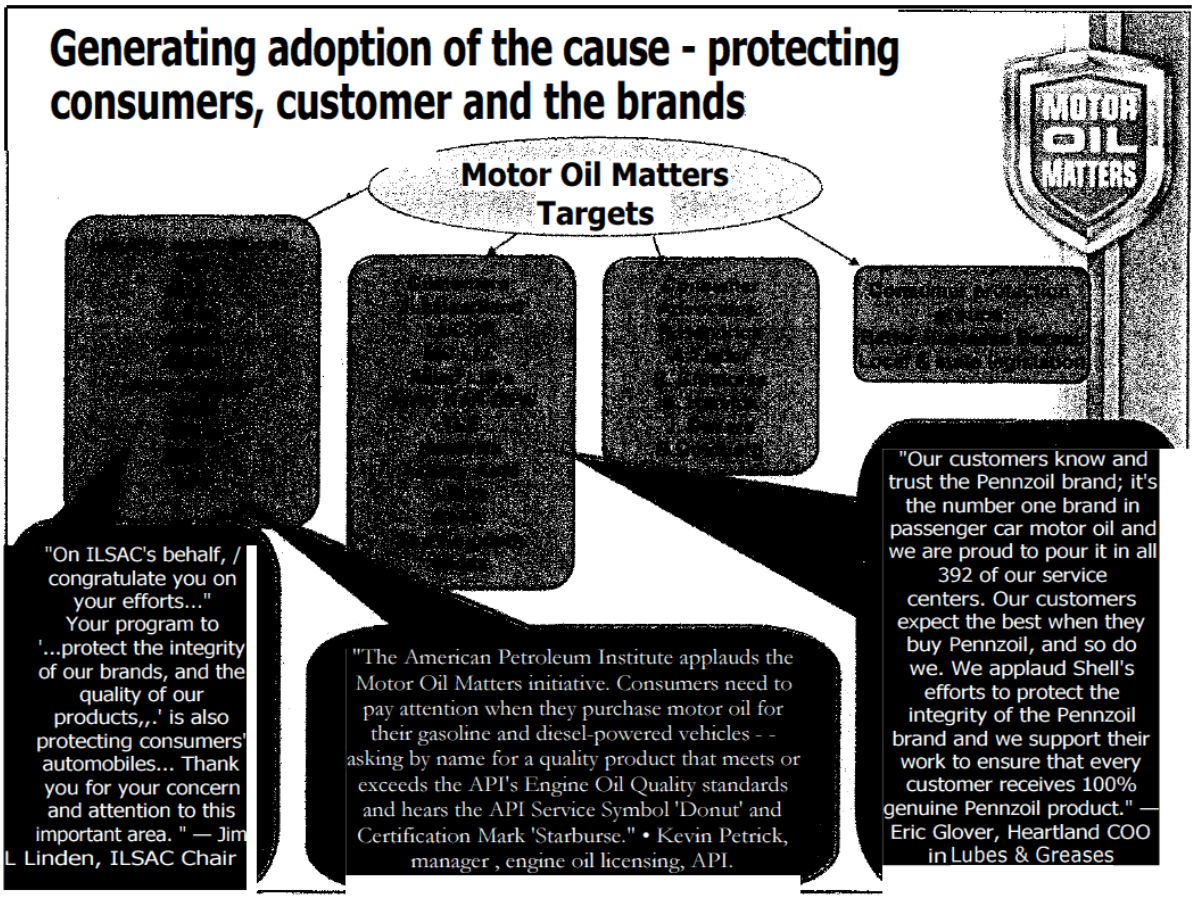
Motor Oil Matters Tours — detroit, dallas, ny

Product Quality Program — installer sampling program launched

Consumer education - MotorOilMatters.org50k+ hits since launch date first week July

Created excitement within trade orgs API/AOCA — participated in Dallas event

Multiple letters endorsing MoM.



Examples of trade and customers who support the efforts

industry organizations interested and customers activate is critical. Using spokespeople as advocates and consumer awareness groups will strengthen our message

These are our Motor Oil Matters targets

to date API, AOCA, ILSAC, AMRA expressed support and interest in joining the cause

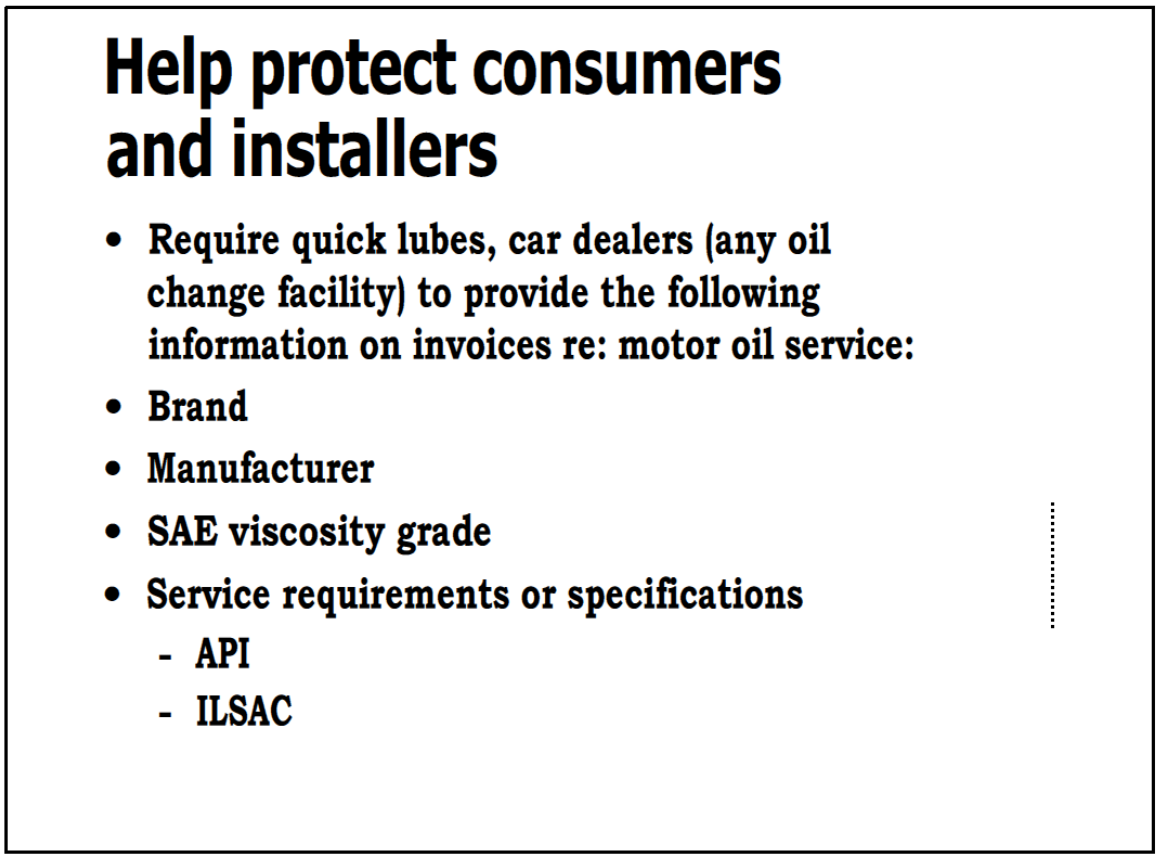
AIADA — American International Automotive dealers association

Auto alliance — 11 manufactures: (GM, Ford, Chrysler, BMW, MB, etc...)

AIAM — association of int'l auto manufacturers — voice of int'l auto manufacturers — DC

AAA — American Automobile Association

AAIA — automotive afteimarket industry association - APPEX



Consumers have no way of verifying what oil they receive. Currently many invoices simple state "bulk oil" or 5w30 oil

Consumers should know what oil is going into their vehciles

INTERNATIONAL LUBRICANT STANDARDIZATION AND APPROVAL COMMITTEE

August 6, 2009

Luis Guimaraes
General Manager — Marketing
Shell Lubricants North America

Mr. Guimaraes,

The International Lubricant Standardization and Approval Committee (ILSAC) (General Motors, Ford, Chrysler, and JAMA) recently learned about Shell's new initiative to monitor lubricant quality in the market (reference the attached Lube Report article by George Gill of LNG Publishing). On ILSAC's behalf, I congratulate you on your efforts to ensure that consumers are receiving the quality of oils they are expecting and paying for, and that their Owners Manuals are recommending. ILSAC, in partnership with the Oil and Additive industries, expends considerable time, effort, and money in developing the specifications for good quality oils that our mutual customers need for use in their automobiles. However, if the consumer is supplied with oils of questionable or poor quality, your industry and mine both suffer, along with the wronged consumer. Your program to "...protect the integrity of our brands, and the quality of our products..." is also protecting consumers' automobiles by helping to keep high quality lubricants available, and as such, is applauded by the automobile manufacturers. Thank you for your concern and attention to this important area. 1LSAC extends an offer to you personally or a Shell representative to meet with the ILSAC to review the findings of your product quality program. Please contact me if you have any questions.

Jim Linden, Chair ILSAC
General Motors Research and Development
586-986-1888, 248-321-5343 (mobile)
james.I.linden@gm.com

C: Scott Lindholm

American International AutomobileDealers

November 2, 2009

Elizabeth Boehm-Miller
Growth Manager, US
Shell Lubricants North America 700 Milam
Houston, TX 77002

Dear Ms. Boehm-Miller:

The American International Automobile Dealers Association would like to commend Shell Lubricants for their Motor Oil Matters initiative and ongoing efforts to educate consumers about the vital role of quality motor oils. AIADA represents the more than 10,000 international automobile franchises and their more than 500,000 employees in the United States.

AIADA recognizes the need to make consumers aware of the importance of using quality motor oil and how it can help extend engine life and improve overall engine efficiency. An efficient engine can result in lower emissions and increased fuel economy. Low quality motor oils that do not meet a vehicle manufacturer's requirements or industry standards can potentially damage a vehicle's engine or void the manufacturer's warranty, costing the consumer in the long run.

AIADA is dedicated exclusively to the economic and political interests of America's international nameplate automobile dealers. The manufacturers of the vehicles our dealers sell and service have spent considerable time and money to design and build engines with the fuel economy and performance that consumers demand. Quality motor oils that meet the stringent requirements manufacturers recommend are vital to the proper operation of these engines in a variety of conditions and can help to ensure a long life of reliable performance. We laud your Motor Oil Matters initiative for educating consumers to specifically request quality motor oils, as well as encouraging any facility that changes oil to do their part to help consumers receive the quality of oil they need to protect their vehicles.

Thank you for bringing this important message to vehicle owners.

Best regards.

Cody Lusk

Cody Lusk
President

American International Automobile Dealers Association
211 N Union Street, Suite 300, Alexandria, Virginia 22314
T: 703.519.7800 • F: 703.519.7810
www.aiada.org

Alliance OF AUTOMOBILE MANUFACTURERS

October 21, 2009

Elizabeth Boehm-Miller
Growth Manager, US
Shell Lubricants North America
700 Milam
Houston, TX 77002

Dear Ms. Boehm-Miller,

On behalf of the Alliance of Automobile Manufacturers, I am writing to applaud Shell's efforts to reduce the use of poor quality motor oils in the marketplace. The Alliance is an association of 11 vehicle manufacturers including BMW Group, Chrysler LLC, Ford Motor Company, General Motors, Jaguar Land Rover, Mazda, Mercedes-Benz USA, Mitsubishi Motors, Porsche, Toyota and Volkswagen.

The Alliance shares your goals of ensuring that consumers understand the benefits of good quality motor oils and receive the quality of oil they need to protect their cars. The benefits can range from better vehicle durability to lower emissions and higher fuel economy. When poor quality oils are used instead, both consumers and the environment can suffer.

Automakers build vehicles designed to last for more than a decade of driving under a variety of conditions. Accomplishing this goal in the real world requires the use of good quality motor oils that meet manufacturer recommendations. Automakers spend considerable resources to define good oil quality and to improve oil specifications over time. Motor Oil Matters is an important program because it will help both consumers and oil change facilities do their part to provide proper vehicle care after the vehicle leaves the manufacturer.

Thank you for undertaking this important initiative.

Sincerely,

Ellen L. Shapiro
Director, Automotive Fuels and Lubricants

Cc: Luis Guimaraes, Shell Lubricants
Geoffrey Phelps, Coyne Public Relations

BMW Group • Chrysler LLC • Ford Motor Company • General Motors • Jaguar Land Rover
Mazda • Mercedes-Benz • Mitsubishi Motors • Porsche • Toyota • Volkswagen

1401 Eye Street, NW, Suite 900, Washington, DC 20005-6562 • Phone 202.326.5500 • Fax 202.326.5567 • www.autoalliance.org

NATIONAL AUTOMOBILE DEALERS ASSOCIATION
8400 Westpark Drive • McLean, Virginia 22102
703 • 821 • 7000

Ms. Elizabeth Boehm-Miller
Growth Manager, US
Shell Lubricants
700 Milam
Houston, TX 77002

Dear Ms. Boehm-Miller:

The National Automobile Dealers Association congratulates Shell Lubricants for launching the Motor Oil Matters program. NADA represents more than 17,000 new-car and -truck dealers, both domestic and international.

We take the reputation of our dealers very seriously and appreciate that Shell Lubricants has taken the initiative to help consumers make informed choices about the of quality motor oils and what it can mean for their vehicles in terms of engine life and efficiency and fuel economy. This is especially important in light of the current economic climate.

Thanks to Shell Lubricants for providing this useful resource filled with clear, concise and insightful information about motor oil and for bringing attention to this important issue. Please keep us informed as this valuable initiative moves forward.

Best regards,

David Hyatt
Vice President and Chief Public Affairs Officer

LUBE REPORT
Industry News from LUBES-n-GREASES

Wednesday, July 15, 2009 VOLUME 9 ISSUE 28
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Shell Goes After Off-brand Lubes

By George Gill

A third-party independent laboratory began testing motor oil samples from Shell installers in Detroit this month, part of a Shell Lubricants campaign to crack down on installers who substitute off-brand or out-of-specification lubricants for the branded products they claim to use.

The product quality program went into effect in Detroit July 1 in conjunction with a local-market customer appreciation tour. Shell plans to launch the program in New York City and Dallas in a couple of weeks. "We expect by the end of the year it's probably going to be up to around the 50 top cities where we have the program going," Luis Guimaraes, general manager for Shell Lubricants' North America marketing, told Lube Report.

Pennzoil, Quaker State and FormulaShell installers are automatically enrolled in the product quality program, according to Shell's program brochure, and it is conducted at no cost to them.

Guimaraes noted that over the last couple of months, Shell Lubricants had noticed some growth in people using its signage and the Pennzoil-Quaker State brands to promote their businesses. "When we were checking that, they were not always using Pennzoil-Quaker State products," he said. "We see that's probably driven by the recession and by some people trying to cut corners in order to keep their business running, which in the end doesn't help them and doesn't help the consumer – people are not getting what they are paying for. We decided it was time to really step in, and make that very clear to consumers and to all our loyal customers, that we will protect the integrity of our brands, and the quality of our products, and do it practically."

Shell uses a special marker in the motor oil, rather than a colored dye, Guimaraes continued. "It's a kind of identity print, as we have as human beings," he explained. "You can trace the marker back to our core formulation, the core components, and really make sure that this is our product. We have done over 100 [sample tests] already, so we're very confident we can really identify the different type of oils vis a vis our own products, including when the products are mixed."

The marker enables Shell to trace the concentrations of the different components used in the motor oil. "On Pennzoil we [track] the cleaning agents that are unique to our formulations; therefore, that component is identifiable because no other company uses that," he cited as one example.

If the product sampling shows the installer is not complying with product standards, he said, Shell Lubricants is taking action, which can include signage removal, or other legal action.

Continued on page 2

George Gill, Editor. *Lube Report* (ISSN 1547-3392), *Lubes'n'Greases* Magazine and *Lubricants Industry Sourcebook* are published by LNG Publishing Co., Inc., 6105-G Arlington Blvd., Falls Church, Virginia 22044 USA. All rights reserved. Website: www.LubeReport.com

AUGUST 2009 VOL. 15 ISSUE 8

LUBE
Industry News

Wednesday, July 15, 2009
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Continued from page 1

"We have done that a couple of times alreac
parts of the country – in all of them we have
cessful," Guimaraes stated. "It's a very simp
You're selling Pennzoil or Quaker State, and
installing a different product. And for the one
really doing what they are promising, there i
for their business, and we are supporting th
tional tools and support."

After launching the product quality program i
New York and Dallas, Shell plans to progress
to other areas. "We think it will be good to fc
areas that have a stronger propensity to hav
problem," he explained. "We thought it woulc
good combination of understanding how the
works, and how it's going to help us roll out
additional cities as we progress across the cc

Guimaraes said the product quality program
three-tier campaign that also includes an upc
"certified installer" program, and a consume
program whose main component includes a
www.motoroilmatters.org.

The site provides basic consumer education
oils in general, including terminology, and en
the importance of using quality motor oil bra
meet key specifications and requirements. "V
ed several low-quality products that don't hav
qualities a motor oil should have, like starting

George Gill, Editor. *Lube Report* (ISSN 1547-3392), *Lube Sourcebook* are published by LNG Publishing Co., Inc., 22044 USA. All rights reserved. Website: www.LubeRepc

LUBES 'N' GREASES

Shell Slo
Motor O

PUBLISHER'S LETTER

With do-it-for-me oil changes rapidly approaching 75 percent of all oil changes in the U.S. private sector, what assurance do we drivers have that we're getting what we pay for? Until recently, not much.

But last month Shell Lubricants publicly launched a three-part campaign to crack down on U.S. installers who substitute off-brand or off-spec lubricants for the Shell-branded products they claim to use. Shell is testing motor oil samples from Pennzoil, Quaker State and FormulaShell installers for the special markers in their oil. Noncomplying installers face tough sanctions, including signage removal and other legal action, Shell said.

The other elements of Shell's product quality program are a new "certified installer" program and a consumer education program, including the web site www.motoroilmatters.org. George Gill, who broke this story in our July 15 Lube Report (www.LubeReport.com), will give you an update in next month's *Lubes'n'Greases*.

Kudos to Shell – owner of the best-selling Pennzoil-Quaker State brands, as well as owner of Jiffy Lube and Pennzoil 10-Minute Oil Change, the top U.S. quick-lube chains – for going public with its quality program. If I'm buying Pennzoil or Quaker State at a quick lube or other oil change store, it's reassuring to know someone is checking to make sure that's what I'm getting.

Wonder where to find information like the percentage of do-it-for-me versus do-it-yourself oil changes, or which quick-lube chain is biggest? If you're a subscriber to the print edition of *Lubes'n'Greases*, enclosed with this issue you received the first edition of our new annual Lubricants Industry Factbook.

This handy reference answers the questions our editors are asked most often about the U.S. and global lubricant markets. Data on market size, trends, pricing and more are graphically displayed in the Factbook.

For information on ordering copies of the Factbook, please visit our website, www.LNGpublishing.com/Factbook/index.cfm.

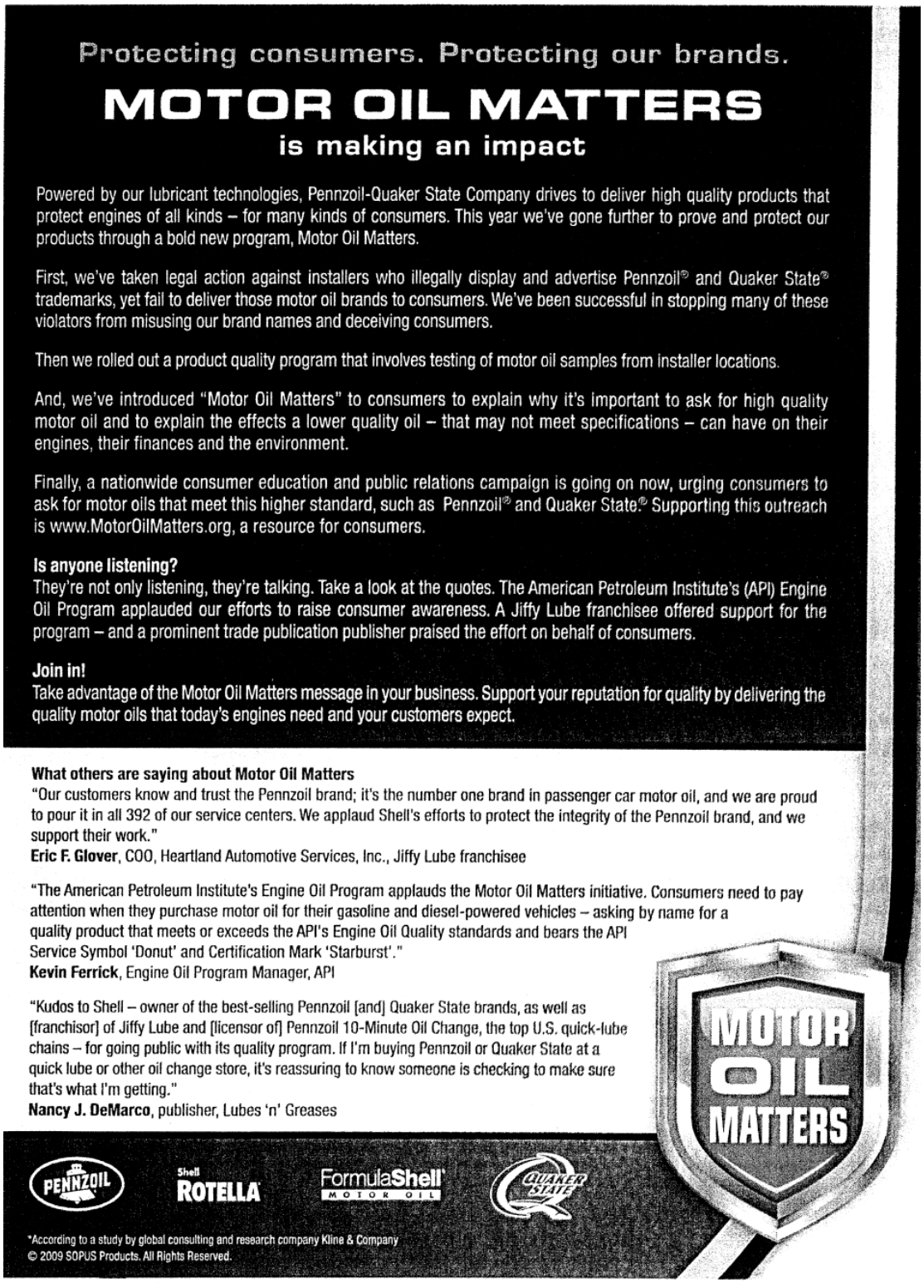
And while you're on the web, be sure to check out the completely updated online Lubricants Industry Sourcebook at www.LNGSourcebook.com.

Nancy J. DeMarco
nancy@LNGpublishing.com



Nancy DeMarco

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Printed in November issues of: *National Oil & Lube News* and *Motor Age*

INDUSTRY EXPERTS APPLAUD MOTOR OIL MATTERS

The American Petroleum Institute's (API) Engine Oil Program applauds the "Motor Oil Matters" campaign because it encourages consumers to be aware of the oil that goes into their engines.

"Consumers need to pay attention when they purchase motor oil for their gasoline and diesel-powered vehicles. They should ask by name for a quality product that meets or exceeds the API's Engine Oil Quality standards and bears the API Service Symbol 'Donut' and Certification Mark 'Starburst'," according to Kevin Ferrick, Engine Oil Program Manager at API. These marks are meant to help assure consumers they are getting quality engine oil installed in their vehicles.

Motor oils that do not meet industry standards or the vehicle manufacturer's requirements could cost consumers in the long run by potentially damaging the vehicle's engine or possibly voiding the manufacturer's warranty.

As part of the Motor Oil Matters campaign, Pennzoil-Quaker State Company (PQS) continues to take aggressive legal action against trademark infringers to protect the public's trust in its quality branded motor oils. Each day, more deceptive signage is coming down due to these efforts. And, more installers who say they're delivering high quality oils but in fact are pouring something else are being stopped, by judicial action when necessary.





API Service Symbol and Certification

Getting the products and quality consumers expect

Motor Oil Matters promotes integrity in the market place. PQS wants to assure its brands stand for high quality motor oils, and to educate consumers about the vital part motor oil plays in extending the life of their vehicle.

For installers, having products with the quality that consumers expect is simply good business – as more and more people learn that *motor oil really does matter.*

PENNZOIL · Shell ROTELLA · FormulaShell MOTOR OIL · Quaker State

www.motoroilmatters.org



Printed in October issues of: *National Oil & Lube News* and *Motor Age*



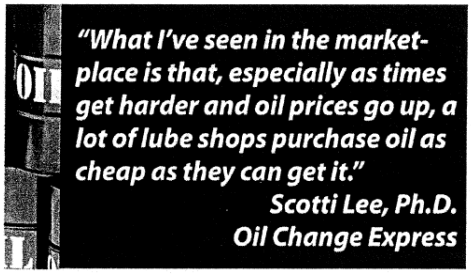
Honesty...One Gallon at a Time.

by Tammy Williams
NOLN Staff Writer
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Editor's Note: This is the first of a two-part series on motor oil fraud, a touchy subject if ever there was one. This month, we explore the various ways that motor oil manufacturers, distributors and fast lube operators can engage in misrepresenting the products they sell — or in outright defrauding their customers. Next month, we'll discuss ways that lube operators can protect themselves and make sure the bulk motor oil they think they're purchasing is really what it claims to be.

In a perfect world, your bays would always be full, ticket averages would be skyrocketing and the oil flowing from your guns would be exactly what you and your customers expect it to be.

In case you haven't taken a look around lately, we're not in a perfect world. Our world is full of news of tough times, bailouts and lawsuits. One lawsuit that hit home for the fast lube industry appeared a couple of years ago in this very magazine.



To sum up the article that appeared in our June 2007 issue, Windward Petroleum and Jackson Oil faced a class action lawsuit in a western Tennessee district court. The lawsuit alleged that Windward Petroleum and Jackson Oil "began improperly and unlawfully mixing, blending, commingling and misbranding different brands, weights and qualities of motor oils and petroleum lubricants at the West Memphis, Arkansas facility." That case is still pending, with a court date tentatively scheduled for next month.

This incident of alleged fraud certainly raised some eyebrows. After all, who really knows that the bulk oil being pumped into a tank is what it's supposed to be?

Tom Glenn, president of Petroleum Trends International, a market research and consulting firm, said there are different categories of misrepresentation that a few dishonest bulk jobbers — rotten apples in a barrel of mostly honest companies — might be guilty of.

"I think there are probably several different levels of concern," Glenn said. "One would be fraud, where something is being sold as A, and it is not. It is B, and B is a lower quality product than A. That would be fraudulent; the product is being sold as something it is not.

"Then there is the next level — a product is openly being sold as unlicensed. If I'm buying that, and I'm told if tested it would meet SM and GF-4 specifications, I think that falls into a gray area. The seller has not tested it, but is representing it as meeting the spec if it were tested. So the operator says, 'Okay, I hear what you're saying. You've been up front about it. I don't have the financial resources to test it; therefore, I can't, but I'm going to trust you.'

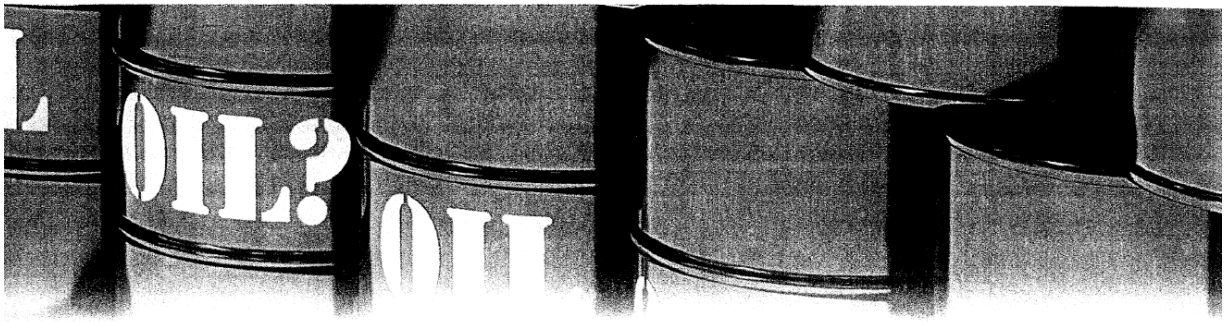
"Then there's the third level, where I'm going to sell you something that doesn't meet specifications. It may or may not, I'm actually not sure, but I know you need a low-price product. You as a buyer say 'I'm willing to take the chance. I don't think anything bad will happen.'"

Distributor Fraud

Bulk oil fraud is not limited solely to the fast lube industry. Bob Winmill of Winmill Equipment, a distributor of construction equipment in New Hampshire and Vermont, shared two stories of potential oil fraud with *National Oil & Lube News*.

Winmill said he has one customer who he believes has spent close to $100,000 in repairs that were probably due to improper oil installed in three pieces of equipment. Two loaders and one excavator had failures, and in two machines the hydraulic oil turned black as coal.

"We made the customer aware that there was a problem," Winmill said. "We called (the distributor), and they made a big noise. They were going to drop off some product. At the time we needed at least 200 gallons, and they dropped off a couple of drums, but they didn't have enough so they dropped off all these pails. The pails were not labeled as



the same product contained in the drums. We immediately notified the distributor and told them you can't go mixing this stuff. They said, 'It's close enough; that stuff's all the same.' At which point we shipped all the product back and found a different source for the product."

"As much as we might want to deny that there are some bad apples out there, the quick lube industry has to be careful and be cognizant of the fact that there are some who are going to cheat and cut corners. And they can give the industry a bad name."

Tom Glenn
Petroleum Trends International

Winmill also recalled another incident that happened at New England's largest coal-fired power plant.

Winmill Equipment had been leasing some equipment to this facility, and they were there to do repairs.

"We were looking at different things, and we saw there were these drums that had been refilled," Winmill said. "It was quite obvious they had been refilled because they had an original (branded) sticker on them, and there was another label slapped on there with a more recent date. So we asked the fuel supervisor (at the plant) what they were using for oil. He said they buy (the branded oil) from their distributor. I asked him if he knew the drums were being refilled. 'Absolutely not,' he said, 'we get fresh oil.'"

Winmill talked to his supplier and found out the seals on drums that come directly from the oil company are supposed to be white, while the ones at the power plant looked like they were galvanized.

"We were quite sure they were not drums direct from (the oil company). We told them, 'Look, you have no idea what is actually in those drums,'" he said.

Consumer Fraud

As much as we don't like to consider it, some operators may be carrying on fraudulent activities themselves. We had an industry insider contact us about one of these cases.

A former employee of a major oil company told NOLN that a Midwest fast lube chain was using fraudulent practices, promoting a major oil that was not always in their tanks and, in turn, not always being installed in customers' vehicles.

"My job as a field territory manager was to protect my employer's investment (the contract with the fast lube chain), including agreements that required percentages of usage and volume, and to monitor whether those were being adhered to," the source said. "This chain would buy whatever they could get, from other major oils to local private-label products."

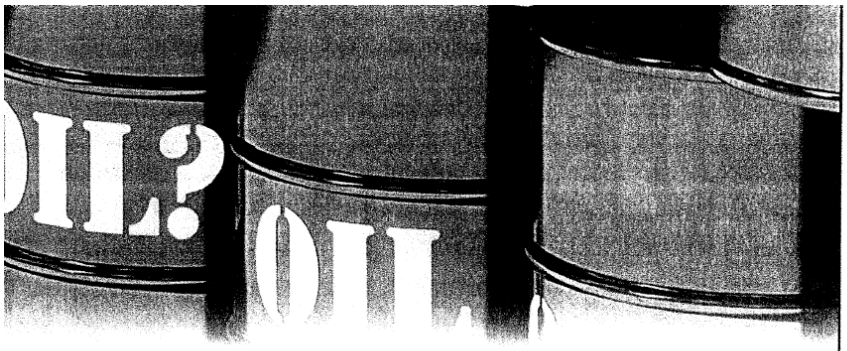
Consumer fraud rears its ugly head here because these stores were claimed to sell a major brand of oil, with this oil even being prominently displayed on their signage, but not always providing that brand of bulk oil to customers.

"I've made somewhat regular phone calls or visits to their stores since I left just to keep tabs on what they use," the source said. "It's interesting the comments that employees of their stores will make when you inquire about what their oil is. They'll call it everything from (brand A) to (brand Z). Who knows what it is on a day-to-day basis? I see different oil distributors' and vendors' trucks backed up to their doors from time to time. There's never any consistency. I have to believe this has gone on for years. A customer's assumption is they are going to get the featured brand. If they don't inquire about the brand and they drive out after they've paid the bill, I'm confident a vast majority of them assume what they've gotten is (the major oil brand touted on their signage) when it really might not be."

Unlicensed Products

In addition to misrepresenting the type of lubricant brand that's being delivered or sold, some lubricant jobbers — and even a few less-than-honest lube shops — sometimes delve into the gray area of selling unlicensed products.

"What I've seen in the marketplace is that, especially as times get harder and oil prices go up, a lot of lube shops purchase oil as cheap as they can get it," said Scotti Lee, Ph.D., operator of Oil Change Express in New Castle, Del-



aware. "There was one operator in Florida, when everybody was paying $8 and $9 a gallon for oil, he was buying it for about $4 a gallon. It was non-spec oil. The (distributor) was selling oil that just didn't meet any specifications at all. The lube operator didn't care; he had insurance. As long as a car's engine is running it becomes very hard for someone to tell you (as an operator) that you put the wrong oil in the car. A number of things can go wrong with an engine. Obviously, the operator probably would have pointed to all those factors before blaming the unlicensed oil."

Lee has tested samples of oil from across the United States as part of his work as a technical advisor to the Automotive Oil Change Association, and he doesn't believe the selling of unlicensed product is an isolated incident.

"I personally went out and acquired samples of oil at my own expense," Lee said. "From one company that has blenders all across the United States you might get a batch that met the very minimum requirements of what was called for, while some of the batches had large gaps in the spec requirements. That's the price you pay for buying oil on the cheap."

DID YOU KNOW?

According to the 2008 *National Oil & Lube News* Fast Lube Operators Survey, the average cost of one gallon of bulk motor oil was $7.68.

Cutting Corners

Lube operators need to stay alert because oil distributors may be trying to make an extra buck as well. When a delivery truck unloads oil into your tanks, is it the proper brand? Is it the correct viscosity? If it were not, would you really ever find out?

"Let's face it, when a truck backs up to our shops, unless we know the distributor has a good reputation, you don't know what you're getting down that hose," Lee said.

And what's coming down that hose is of much importance to operators. Luckily, Glenn has some insight on this subject.

"Here's the challenge," Glenn said. "Let's say I'm a fast lube. I buy my favorite major brand oil and that's the only thing I ever buy. It's been in my tanks all the time. But my distributor slips in a load of something else from time to time. Then, the next load received was the correct oil, but my tank wasn't totally empty."

Is there a test you can do to tell what is really in your tank?





"It depends when you test the oil, and what you test for," Glenn said. "It'd be a challenge — an expensive challenge — to prove that what was in my tank wasn't 100 percent my favorite major brand oil. As the percentage left in the tank gets lower, the challenge gets bigger."

For the most part, the chemical makeup of modern motor oil is the same; however, there are a few companies out there that can tell if the oil is theirs.

"I think one or two majors use chemical markers," Glenn said. "There are special markers they can use to detect if it is their oil, but for the most part companies in the lubricants business don't use them."

> ***"It was quite obvious the drums had been refilled because they had an original (branded) sticker on them, and there was another label slapped on there with a more recent date."***
>
> ***Bob Winmill***
> ***Winmill Equipment***

Some oil manufacturers may be looking to produce cheaper motor oil, and Glenn explained some places they could cut corners.

The most likely place for a blender or distributor to cut corners is in the area of volatility, which is burn-off that occurs when oil gets hot, causing high oil consumption and emissions.

"They might take a chance on the volatility because it's a relatively expensive test, and it's unlikely anyone will look at it," Glenn said. "Moreover, if there's a problem with volatility, it is more an issue of a compromise of fuel economy, which is so small that a consumer would likely never see it. You might see it in a test laboratory, but you're not going to see it as a consumer. If I don't put any additives in my oil, there is a noticeable problem. But with some of these other issues, such as volatility, they're more related to meeting EPA specifications."

Additives signatures can potentially be forged, as handwriting can be, and some inexpensive tests can decipher the basics of the signature. But beyond that, it's hard to tell.

"Without the use of expensive testing, depending upon how good you are at replicating the signature of that oil it could be challenging to say it is or isn't a certain oil unless a marker was used," Glenn said.

A manufacturer probably isn't going to cut corners on viscosity, however, because viscosity variations can easily be detected with an inexpensive test, Glenn said.

Integrity

The issues of fraud and misrepresentation pretty much come down to integrity. Is the oil manufacturer or blender creating a lubricant product that meets the specifications it claims to? Is the lubricant distributor or jobber delivering the product the fast lube is actually paying for? And is the fast lube operator filling customers' vehicles with the name-brand lubricant they believe they're buying?

"As much as we might want to deny that there are some bad apples out there, the quick lube industry has to be careful and be cognizant of the fact that there are some who are going to cheat and cut corners," Glenn said. "And they can give the industry a bad name. It only takes one Geraldo Rivera to go into a fast lube with his hidden camera and put something on national TV that scares everybody. I'm not suggesting that's going to happen, but it has happened in the past (in other industries)."

Glenn said in today's tight economy, it can be very tempting — for both jobbers and lube operators — to buy the lowest-priced product or stretch the product in their tanks by mixing in a lower quality lubricant.

"I would say just be careful that you get what you pay for," he said. "If it's too good a deal to be true, maybe it's not true. So protect yourself."

At the retail level, it's up to each individual operator to decide whether or not they're going to genuinely provide the products their customers believe they are purchasing, or cut corners. Sure, you might make an extra buck or two, but is it worth the potential legal liability — people have gone to prison for consumer fraud, after all — and, worse, giving the entire industry a black eye that could affect the fortunes of the tens of thousands of men and women who are making an honest living in the industry? Here's hoping everyone who reads this has the integrity to choose the honest path.



Oil's Well?

Ensuring the Oil You Pay For Is the Oil You Get

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Editor's Note: *Last month, in the first of a two-part series, we discussed the issue of bulk oil fraud and identified the problem on several levels: Bulk oil distributors misrepresenting a product as "branded" when it is not; distributors "co-mingling" different grades or weights of bulk motor oil; or distributors selling an unlicensed motor oil and representing it as licensed. We also noted that these same issues occasionally occur at the retail level, with some lube facilities using the same or similar tactics with their customers. This month, we look at the steps the industry has taken to ensure the integrity of bulk motor oil.*

You can't see it. That's the problem in a nutshell. Bulk motor oil goes from blending plant to bulk storage tank to tanker truck to a somewhat smaller bulk storage tank to a delivery truck to a still smaller bulk storage tank, then through a fast lube's hoses/reels and into the crankcase of a customer's vehicle. And in all that time, no one ever lays eyes on the product.



And even if you could lay eyes on it, would you know what to look for? How many people can, just by looking at a beaker of motor oil, say, "Yep, that's XYZ Brand's 5W-20"?

Looking Out For You

Fortunately, many groups with connections to the bulk motor oil distribution industry have taken steps to ensure that the bulk oil you have in your tanks is exactly what you paid for. One such group is the American Petroleum Institute (API), which is also responsible for licensing motor oil to ensure it meets minimum protective requirements.

"We've been monitoring bulk products since 1999," said Kevin Ferrick, manager of Engine Oil Certification at API.

According to Ferrick, API collects approximately 200 samples of bulk oil each year from facilities that are dispensing licensed oil. Agents who collect samples are required to ask the facility what oil they are dispensing, then they purchase a small sample and test it. API only collects and tests products that claim to be licensed.

"Our goal is to monitor API-licensed companies and make sure the oil meets API standards," Ferrick said.

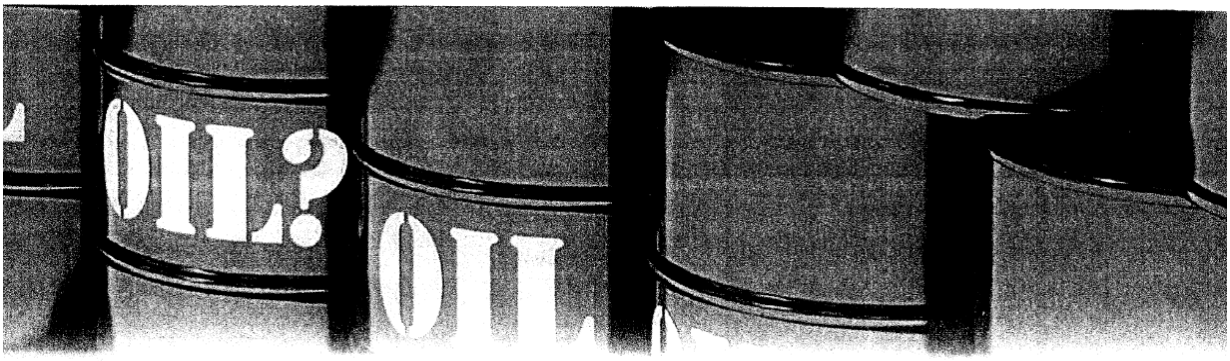
From the results of its testing, Ferrick said that while API finds some problems with bulk products, the rate of noncompliance is not significantly higher than is found with bottled motor oil. Most of the time, product that is tested does meet API requirements.

"There's been a shift from packaged goods to bulk product in the marketplace, and our concern is to protect consumers and installers, making sure each group gets what they expect from their bulk motor oil," Ferrick said.

New this year, API is pulling off two samples, one of which undergoes a "quick test." The results of this test are usually known within a week, whereas the full sample testing, a traditional "blind" scientific method, can take several weeks to perform. The quick test allows API to evaluate bulk oil samples very quickly and notify installers and blenders of any problems discovered.

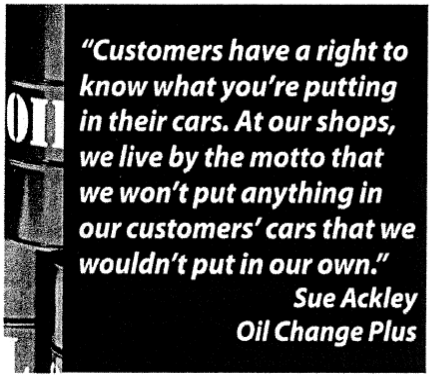
In instances where a particular sample is tested and found not to meet API minimum standards, the group will contact the licensee responsible for blending the formula and ask for a response. Ferrick said API would like to see an oil blender offer an explanation for the failure and a plan for remedying the problem.

"We work with the licensee, but we expect a response," Ferrick said. "If no progress is made, we might have to



the distributor only mixes API-licensed products together, however, the non-branded bulk oil will be fine. However, as previously mentioned a distributor who changes suppliers frequently will make it difficult for an operator to track down any problems.

Ackley cautioned that distributors and operators alike should never co-mingle different grades/weights of oil, however, as doing so can cause serious performance issues in the oil.



"Customers have a right to know what you're putting in their cars," she said. "At our shops we live by the motto that we won't put anything in our customers' cars that we wouldn't put in our own."

Like Ferrick, Ackley said if an operator has suspicions about bulk motor oil, they should have the oil tested, a process that can cost as little as $9 per sample.

"If you ever believe that a product you've received isn't what you paid for, have it tested," she said.

A Branded Crackdown

Perhaps no group has more at stake when it comes to bulk motor oil integrity than the oil manufacturers/marketers themselves. After all, it's usually their name on the hose reel.

One such company is taking definitive action against installers who might be misrepresenting the products they sell to customers.

"Pennzoil-Quaker State and Shell Oil Company have been vigorously taking action against unethical installers who are violating our trademarks and the trust of consumers," said Luis Guimaraes, vice president of Marketing for Shell Oil.

Guimaraes said the company is stepping up enforcement of its brand protection on several levels this year.

"We are enlisting our national sales force and independent distributors to help identify installers who advertise our brands but do not install them," he said. "We will continue to escalate legal actions against violators. These practices are illegal at the federal and state levels, and our company has already filed and successfully concluded several such lawsuits."

According to Guimaraes, Shell maintains a strict Distributor Product Quality Assurance Program that ensures installers that purchase Pennzoil, Quaker State or Shell motor oils from an authorized distributor can trust that they are receiving genuine product.

"We are taking aggressive action because our loyal customers are being forced to compete with installers pouring counterfeit oils," he said. "We devote considerable resources to research and development in order to provide consumers with quality motor oils, and consumers count upon our products to protect their vehicles. It is therefore very important that we protect the trust that consumers place in our brands."

Guimaraes said he hopes that other companies will move to protect their brands, as well, in a "concerted effort to end a practice that can tempt the unscrupulous in these difficult economic times."

Monitor and Test

Even though oil marketers and license groups like API conduct some limited testing, the testing is not widespread enough to completely eradicate the problem of bulk oil fraud. In the end, operators themselves have to be vigilant about the bulk oil product coming into their facilities.

"In the states of North and South Carolina, the government monitors bulk oil. They take samples and test," said Tom Glenn, president of Petroleum Trends International, a market research and consulting firm. "In most other states, unless there is a complaint, there is no routine testing."

Which is why, Glenn said, operators should take steps to ensure the integrity of the products they're selling.

"If you're concerned, the first thing you should do is ask for documentation that specifically states the oil spec, such as API SM/ILSAC GF-4. Second, if I were running a quick lube, when they filled my tank I would take and retain a sample. Just collect a two-ounce sample of whatever they put in my tank. I would go through at least reasonable protocol to make sure the driver was aware I was sampling. If the driver protests and asks why you're taking samples, or if the distribu-



take more drastic measures like cancelling the license or even conducting a product recall."

API can, to a limited extent, test for brand identity. Companies that apply for a license with API are required to supply a sample of the formula. This formula allows API to "fingerprint" a collected sample. However, problems arise whenever two brands of oil are co-mingled.

"Co-mingling of two licensed products — same viscosity grade and API performance level — should not cause a problem in terms of performance, but it could make it more difficult to fingerprint the sample," Ferrick said. "In order to fingerprint a sample, we have to at least know whose product it is supposed to be."

> ***"We will continue to escalate legal actions against violators. These practices are illegal at the federal and state levels. We have already filed and concluded several such lawsuits."***
>
> ***Luis Guimaraes***
> ***Shell Oil***

One thing API testing can determine, however, is whether different grades or weights of oil have been co-mingled.

"You could have issues whenever you mix, say, 5W-20 and 10W-30 together," Ferrick said. A co-mingled oil sample would likely show up in some of the tests API performs, like those used to measure an oil's cold temperature properties. Installers should make sure viscosity grades and performance levels are not mixed.

Ferrick had a few recommendations for lube operators with concerns about their bulk motor oil.

"You need to demand proof that the product is licensed. Ask for documentation proving that what you're getting is what you asked for," he said. "When you ask for proof of licensing, it puts the onus on the oil marketers and distributors. I'd do that every single time."

If an operator does suspect that his distributor is "fudging" things a bit, Ferrick said there are several options. The first would be to have a sample of the oil tested at an independent laboratory. These are low-cost procedures that can determine the oil's basic properties and are usually good indicators if something is amiss. Unfortunately, a full test of the oil will likely require in-depth bench testing and maybe even engine testing, procedures that are time-consuming and more expensive.

However, Ferrick said operators can contact API if they believe an initial test indicated problems. He also recommended contacting the oil company in charge of blending the product.

"Ultimately it is up to the oil marketers to remedy any situation at the distributor level," he said. "API-licensed oil marketer are responsible for the quality of their products."

A Unique Point of View

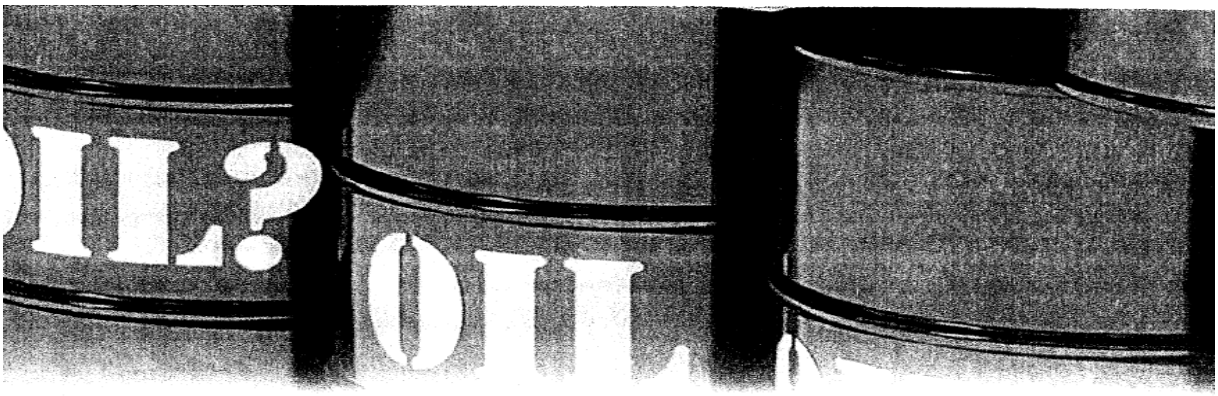
Sue Ackley is in a unique position. As owner of several Oil Change Plus facilities in the St. Louis, Missouri, area, Ackley is a longtime lube operator and past-president of the Automotive Oil Change Association. However, Ackley also works as a sales representative for Energy Petroleum Company, a multi-brand lubricants distributor in St. Louis. This gives her the unique position of being both a buyer and seller of bulk motor oil.

"The biggest key in protecting yourself from bulk motor oil fraud is to make sure the people you're doing business with are reputable," she said. "Ask for references. Talk with their other customers to find out how the distributor does business. Ask if the distributor switches suppliers a lot, because if you're using a non-branded motor oil and you run into problems, it will be tough to pin down which oil caused the problems. As a distributor, we try to stick with the same suppliers for at least a year at a time."

Ackley said branded bulk oil is usually checked by the manufacturer/blender to ensure its integrity, and as such is rarely co-mingled.

"The blenders come around from time to time and check the brand," she said. "All the majors put various trace elements in their oil, and they can tell from a small sampling whether that oil is what it is supposed to be. But the only way they can tell a difference is from the trace elements. Most branded oil looks the same."

On the non-branded side, co-mingling is a bigger problem. Distributors who change suppliers will likely still have some older product in their bulk tanks, as Ackley said distributors rarely let their bulk tanks run completely empty. As long as



tor gets nervous and asks why you're doing that, it's a good indication there might be a problem. It doesn't cost much to buy a two-ounce laboratory jar, put the oil in it, write the delivery date on it and put it on a shelf," he said. "If a problem occurs, the supplier will be aware that there's a sample out there. Is the sample something that would stand up in court? It might not, but the very fact that you're taking it and that you could have it tested at any time is certainly something that would be of concern to a supplier if they were trying to cut corners."

Others in the industry agreed, with one operator already using a similar system.

"When I'm testing oil I get six-ounce bottles — though one company wanted at least a quart of oil. I package it, send it off and wait," said Scotti Lee, longtime operator of Oil Change Express in New Castle, Delaware. "To do a test properly, you have to get the oil that's coming out of the truck. You can't have it go into your tank and then pump it out of your gun. If you have good oil and bad oil, you're going to get a slight mixture and it might tilt the results into the 'good' reading."

Lee said periodic testing can avoid major — and expensive — problems down the road.

In the final analysis, entities ranging from the oil marketers themselves to some distributors to groups like API all have a hand in ensuring the integrity of bulk motor oil. But holes exist in the system, and it only takes a few unscrupulous individuals and a media story that goes "viral" to give the entire industry a black eye from which it might take years to recover.

That's why it is important that lube operators work closely with their distributors. Ask for the requisite paperwork with every oil delivery, and if you suspect a problem — or even if you don't and just want to monitor the bulk oil — take samples and store them or have them tested.

For more information about independent laboratories that conduct ASTM tests on motor oil (D5800 NOACK volatility, D5293 cold crank and D2896 total base number are some of the more common tests), visit: www.astm.org

Independent Labs Specializing in Oil Testing:

ANA Laboratories
www.analaboratories.com

Analytical Testing Services
www.wetestit.com

Bently Tribology Services
www.bentlytribology.com

Galbraith Laboratories
www.galbraith.com

Petro-Lubricant Testing Laboratories
www.pltlab.com

Phoenix Chemical Laboratory
www.xnet.com/~pclinc

energy API

Identifying Performance of Engine Oil Dispensed in Bulk

Central Weights and Measures Association
May 2010

Kevin Ferrick



energy API

Need for Changes to NIST 130

- API has sampled licensed oils sold in bulk since 1999
  - Bulk products showed higher rate of noncompliance over 4-year average
- Testing by companies showed similar results
- Over a decade of sampling products, several items make sampling of bulk oils difficult
  - Identification of bulk oils as API licensed
  - Identification of brand
  - Inconsistency in methods used to safeguard and identify chain of custody

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Need for Changes to NIST 130

- API has considered in the past implementing some type of chain-of-custody program to address bulk oils
- Shell introduced Motor Oil Matters in 2009
  - Motor oil quality and integrity program
  - Recognized need to inform consumers of importance of using quality oils meeting API performance requirements
  - Addressed trade deception
  - Recognized need to take Motor Oil Matters industry-wide
  - Last week, API announced intention to assume leadership of Motor Oil Matters
- Chain-of-custody program now being considered by API
- NIST 130 needs to be changed to protect consumers

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Current NIST 130 Language

3.13.1. Labeling of Vehicle Motor Oil.

3.13.1.1. Viscosity. – The label on each container of vehicle motor oil shall contain the viscosity grade classification preceded by the letters "SAE" in accordance with the SAE International's latest version of SAE J300.

3.13.1.2. Intended Use. – The label on each container of vehicle motor oil shall contain a statement of its intended use in accordance with the latest version of SAE J300.

3.13.1.3. Engine Service Category. – The label on each container of vehicle motor oil shall contain the engine service category, or categories, met in letters not less than 3.18 mm (1/8 in) in height, as defined by the latest version of SAE J183 or API Publication 1509, "Engine Oil Licensing and Certification System."

3.13.1.3.1. Exception for Quantities of One Gallon (3.785 L) or Less. – A container of engine vehicle motor oil with a volume of 1 gal (3.785 L) or less that does not meet an active service category, as defined by the latest version of SAE J183, shall bear a plainly visible cautionary statement in compliance with SAE J183, Appendix A, for obsolete API oil categories.

energy API

California Regulations

- California has extensive regulations covering distribution and sale of engine oil
  - Engine oils must meet SAE J300 and J183
  - Containers must show SAE/API service classification
  - Labeling requirement for engine oil containers, receptacles, pumps, dispensers and inlet pipes
  - Label required to provide product name, brand, trademark, or trade name and viscosity (service classification not included in this list)
  - Containers 1 gallon or less must include statement indicating suitability for auto model years or condition of service

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North Carolina Regulations

- Brand name must be displayed unless labeled "Lubricating Oil No Brand"
- Misrepresentation of brands for sale prohibited (labels or signage must reflect lubricating oil available for sale)
- Mixing different brands for sale under specific brand name prohibited
- Testing of lubricating oil by state permitted
- Retailers required to keep copies of invoices or delivery tickets for 1 year (no specific requirement for SAE viscosity grade or API performance level)
- Transporters of lubricating oil required to have in possession invoice or bill of lading

Incorporating Bulk into NIST 130

- Require API performance level and SAE viscosity grade on containers, receptacles, pumps, dispensers, and storage tanks
- Also require API performance level and SAE viscosity grade on invoice from sale of motor oil dispensed from receptacles, pumps, dispensers, and storage tanks
- Exclude delivery vehicles from requirement (tank trucks and rail cars) as long as bill of lading or other documentation provides API performance level and SAE viscosity grade

Other Possible Changes

- Cite J183 in 3.13.1.2, not J300
  - J300 = viscosity grade
  - J183 = performance level
- Require identification of obsolete performance levels (for example, API SA, SB, SC) on containers, receptacles, pumps, dispensers, and storage tanks (end 3.13.1.3.1 exception)
- Include J183 warnings on obsolete products
  - "This oil is rated API SA. It contains no additives. It is not suitable for most gasoline-powered automotive engines built after 1930. Use in modern engines might cause unsatisfactory engine performance or equipment harm"
  - Similar language for other obsolete API performance levels

energy API

Incorporating Changes into NIST 130

- API Lubricants Group considering suitable wording for NIST 130
- Possible changes to recognize motor oils sold in bulk (in red)
  - **3.13.1.3. Engine Service Category.** – The label on a vehicle motor oil container, receptacle, pump, dispenser, or storage tank and the invoice from the sale of vehicle motor oil dispensed from a receptacle, pump, dispenser , or storage tank shall contain the engine service category or categories met in letters not less than 3.18 mm (1/8 in) in height, as defined by the latest version of SAE J183 or API Publication 1509, "Engine Oil Licensing and Certification System."
  - **3.13.1.3.1. Inactive or Obsolete Service Categories.** –The label on a vehicle motor oil container, receptacle, pump, dispenser, or storage tank and the invoice from the sale of vehicle motor oil dispensed from a receptacle, pump, dispenser , or storage tank shall bear a plainly visible cautionary statement in compliance with SAE J183, Appendix A, whenever the vehicle motor oil in the container or in bulk does not meet an active API service category as defined by the latest version of SAE J183. [removed 1-gallon exception]
  - **3.13.1.3.2. Tank Trucks or Rail Cars** – Tank trucks or rail cars that are used to deliver vehicle motor oil are not required to display the SAE viscosity grade and service category or categories as long as the bill of lading or other documentation provides that information.

energy API

Thank You

Contact information

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Manager, Engine Oil Licensing and Certification System
Diesel Exhaust Fluid Certification Program
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INDEPENDENT LUBRICANT MANUFACTURERS ASSOCIATION

July 15, 2011

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General Counsel
Jeffrey L. Leiter

Mr. John Gaccione
Chairman, NCWM Laws & Regulations Committee
c/o Westchester County Department of Weights & Measures
112 East Post Road, 4th Floor
White Plains, New York 10601

Re: Recommended Change to Handbook 130, Section 3.13.1, Labeling of Vehicle Motor Oil

Dear Mr. Gaccione:

The Independent Lubricant Manufacturers Association ("ILMA") and its members who make and sell quality lubricants throughout the United State support the proposed revisions to Section 3.13.1 of the National Conference on Weights and Measure's ("NCWM") *Handbook 130 – Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality* ("Handbook 130"). These proposed revisions would apply the labeling requirements for packaged motor oils to motor oils sold in bulk by manufacturers and distributors to installers.

Introduction of ILMA

ILMA, established in 1948, is a trade association of 290 member companies in North America, consisting largely of small businesses, ranging in size from fewer than 10 to more than 200 employees. Independent lubricant manufacturers by definition in the Association's Bylaws are neither owned nor controlled by companies that explore for or refine crude oil to produce lubricant base stocks. Base oils are purchased from refiners, who are also competitors in the sale of finished products.

Independent lubricant manufacturers succeed by manufacturing and marketing high-quality, often specialized, lubricants. Their success in this competitive market also is directly attributable to their tradition of providing excellent, individualized service to their customers. ILMA members manufacture automotive, truck, marine, aircraft and industrial engine oils; transmission fluids; hydraulic fluids; greases; general industrial oils; power equipment oils; process oils; metal removal, treatment, protecting and forming lubricants; and rolling oils. In order to manufacture a lubricant, ILMA member companies purchase oil and synthetic lubricant base stocks and a wide range of additives.

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ILMA members historically have marketed automotive engine oils and transmission fluids that meet and/or exceed the automakers' or original equipment manufacturers' ("OEMs") performance and warranty requirements. In some instances, the engine oils and transmission fluids are licensed. ILMA members have provided competitively-priced products to car dealerships and the motoring public throughout the Association's 63-year history.

ILMA participated in the NCWM's adoption of the automotive lubricants provisions in Handbook 130, submitting comments and testifying in support of the then proposal.

Quality Testing Initiative

ILMA has been concerned for some time with the misrepresentation of the quality and performance levels of lubricants in the marketplace. As noted above, the Association supported NCWM's efforts to include automotive lubricants provisions in Handbook 130, which is an important element in ensuring consistency of information to consumers across the country. ILMA adopted an enforceable Code of Ethics in 1984, which has been updated and revised several times.

To supplement its Code of Ethics, ILMA has operated since 2007, an Association program to randomly test members' engine oils and tractor hydraulic fluids ("THFs") to assure the represented qualities of the products. ILMA's quality testing initiative is intended to enhance and protect the reputation of independent lubricant manufacturers and to ensure consumers that product performance lives up to claims asserted on container labels. ILMA worked with representatives of the American Petroleum Institute's Lubricants Committee ("API"), the American Chemistry Council ("ACC"), and the Automotive Oil Change Association in developing the program for engine oils and with API, ACC and OEMs for THFs.

The "guts" of ILMA's program for engine oils essentially involves an expansion of API's existing After-Market Audit Program (AMAP) for API-licensed engine oils. ILMA members' non-API licensed engine oils are tested and compared to an "acceptance range" based on SAE J300, API 1509, and a third-party (Institute of Materials) statistical profile for engine oils. ILMA uses a third-party to collect samples (both packaged and bulk) in the marketplace and an independent laboratory analyzes the products on a "blind" basis. ILMA's Ethics Committee and counsel work to resolve testing issues (*e.g.,* Improper viscosity claims) with the particular manufacturer under procedures set forth in the Association's Code of Ethics. ILMA's goal is to randomly test 20 percent of the members' non-API licensed engine oils on an annual basis.

Proposed Changes to Section 3.13.1

While ILMA's quality testing initiative and API's AMAP program survey a significant percentage of engine oils sold into the marketplace, there are misrepresented products being sold to installers and consumers that are not be "captured" by either ILMA or

API's testing. ILMA's members, in particular, believe that bulk oils are the "weak link" in the "quality chain." API's AMAP program has tested bulk oils since 1999, and the bulk products showed, on average, a higher rate of non-compliance. (ILMA's testing program is sampling and testing members' bulk products for the first time this year.) Problems associated with bulk oil sales include: improper identification of bulk oils as API licensed, improper identification of the oil brand; and inconsistency in methods used in the chain-of-custody to safeguard the identification of the oil brand. ILMA believes that misrepresentation of bulk motor oils occurs every day – both intentionally and unintentionally. The results of such misrepresentation include erosion of consumer confidence, potential liability for installers, and attacks on the quality levels of motor oils and other lubricants made by ILMA's members.

Accordingly, ILMA encourages you and your NCWM colleagues to adopt the proposed revisions to Section 3.13.1 of Handbook 130. It makes sense that installers should have the proper information on the motor oils that they are buying in bulk and then dispensing into customer's vehicles. Installers' receipts to their customers should include the same information. The adoption of the revisions to Section 3.13.1 of Handbook 313 will go a long way to ensuring consumers that they are getting the quality motor oils they expect and are paying for when servicing their vehicles.

ILMA appreciates this opportunity to comment.

Sincerely,



Celeste M. Powers, CAE
Executive Director

cc: ILMA Board of Directors
Kevin Ferrick, API
Leanne Stump, AOCA
Jeffrey L. Leiter, Esq.

Appendix H

Item 260-4: Handbook 133, Seed Count for Agriculture Seed

(Section 4.11. Procedure for Checking the Contents of Specific Agriculture Seed Packages Labeled by Count)

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AMERICAN SEED TRADE ASSOCIATION

November 30, 2010

John Gaccione
Chairman, NCWM Laws & Regulations Committee
c/o Westchester County Dep't of Weights & Measures
112 East Post Road, 4th floor
White Plains, NY 10601

Re: Seed Count Rule for Agricultural Seeds

Dear Mr. Gaccione:

The American Seed Trade Association (ASTA) is writing to express opposition to the pending petition from the Western Weights and Measures Association to rescind the seed count rule for agricultural seeds in Handbook 133 that was adopted by the National Conference of Weights and Measures (NCWM) in July 2010. We are deeply concerned by this proposal because of the uncertainty it will cause for our members and the inconsistency it will create for the regulatory community. The seed count rule adopted by NCWM is a validated, consistent, and practical means of verifying labeled seed counts for agricultural seeds. It would be detrimental to regulators and farmers if the rescission petition moves forward.

Benefits of the Seed Count Rule

At its annual meeting in 2010, the Conference adopted a rule regarding agricultural seed count that harmonized Handbook 133 with the provisions for verifying seed count that are used throughout the seed regulatory community. This action gave regulators an important tool to ensure the accuracy of labeled net quantity of contents statements on large bags of agricultural seed, which increasingly include a statement of count. This was particularly important for regulators in agricultural states because, prior to adoption of the seed count rule, there was no effective means for weights and measures regulators to verify labeled statements of count.

The adopted procedures incorporated the seed count rules that the Association for Official Seed Analysts (AOSA) developed as a result of many years of careful study and consideration. AOSA is a professional organization of seed laboratories whose members include state and federal seed regulators. Because AOSA's rules are used by seed regulators when they verify labeled statements of count, NCWM's action created uniformity in the laws for determining seed count for corn, soybean, field bean and wheat seed. Without this uniformity, certain states would apply different procedures and MAVs depending on whether the seed regulators or weights and measures inspectors were verifying the accuracy of seed count labeling.

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The adopted procedures provide benefits to weights and measures regulators, farmers, and seed companies. Weights and measures regulators now have an effective and practical method to verify labeled seed count. This increases their ability to regulate labeling of these important commodities effectively. Farmers now have assurance that the seed they buy is accurately labeled. Seed companies now have assurance that a uniform testing procedure is in place for both weights and measures and seed regulators.

Concerns with the Rescission Proposal

The pending proposal would remove the seed count rule from Handbook 133 and establish a working group to consider next steps. Specifically, the working group would be directed to undertake "necessary studies, laboratory testing, field trial, and other appropriate measures to establish procedures for the verification of the accuracy and repeatability of 'mechanical seed counter' devices and/or to develop seed count procedures that are practical and reliable for field enforcement activities by Weights and Measures officials." These steps are unnecessary and would be duplicative of the validation efforts already conducted by AOSA when the seed count rule was initially promulgated. Indeed, it is our understanding that the Conference originally rejected proposals to address this issue more than a decade ago due to the absence of the validating research that was subsequently undertaken by AOSA.

AOSA's method verifies seed count with a mechanical seed counter. This method is widely used to verify seed count and was validated by the seed regulatory community. The rule is practical, straight forward, reliable, replicable, and cost effective. AOSA plans to submit to the Conference a white paper regarding the validation of its method. It is important to recognize that the procedure does not require any specialized knowledge or expertise to apply. Although its wording may sound technical, implementation is not. For example, the "purity analysis" in the rule simply requires separation of seeds from any debris such as sticks, rocks, and bugs that may be in the sample.

Although there may be concerns about the cost of mechanical seed counters, this does not justify rescission of the rule. There is no mandate to buy such equipment and, for states that do not expect to conduct inspections of seed count (i.e., non-agricultural states), it would not be worthwhile to do so. For states that do expect to do such inspections, purchase of seed counters will be a resource allocation issue that must be determined on a jurisdiction-by-jurisdiction basis. It is important to note, however, that most seed regulators and state seed laboratories already have mechanical seed counters that could be shared with their weights and measures colleagues. Furthermore, the Conference voted to adopt the seed count rule after discussing and debating cost concerns.

If the Conference adopts this proposal, it will rescind an efficient, practical, and effective means that weights and measures regulators have to verify seed count. Because the rule currently in place is validated and effective, efforts from a working group would be unnecessarily duplicative of AOSA's previous work.

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Implementation Assistance

Many of the concerns in the rescission proposal are appropriately addressed through training programs, as all new procedures inherently require training to ensure effective implementation. AOSA has offered to work with the Conference or interested states to disseminate training materials and also would welcome the opportunity to hold training webinars for interested states or regulators. Although no specialized knowledge is required to implement the seed count rule, such training programs will ensure that regulators have first hand knowledge of how the procedure works. Training, not amendments to Handbook 133, provide the traditional and appropriate vehicle for addressing implementation concerns.

In conclusion, ASTA opposes the petition to rescind the seed count rule because it would be a step backwards for the Conference. Keeping the rule in place is in the best interest of weights and measures regulators, seed regulators, farmers, and seed manufacturers.

If we may be of assistance or you have any questions, please do not hesitate to contact us. Thank you for your consideration.

Sincerely,

A. W. LaVigne

Andrew W. LaVigne
President & CEO
American Seed Trade Association

cc: Lisa Warfield, NIST
Don Onwiler, NCWM

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AOSA Rules for Testing

(1) Coated or encrusted seed: seed that has been covered by a layer(s) of materials that obscure the original shape and size of the seed resulting in a substantial weight increase. The addition of biologicals, pesticides, identifying colorants or dyes, and/or other active ingredients including polymers can be included in this process. Refer to sections 3.8 and 6.8 I.

(2) Film-coated seed: film-coated seed retains the shape and the general size of the raw seed with a minimal weight gain. The film coating may contain polymers, pesticides, biologicals, identifying colorants or dyes, and other additives. The coating should result in a more or less continuous covering that eliminates or minimizes product dust-off.

(3) Inoculated seed: seed that has received a coating of a commercial preparation containing a microbial product, e.g. *Rhizobium* sp.

(4) Pelleted seed: seed that has been covered by a layer(s) of materials that obscure the original shape and size of the seed resulting in a substantial weight increase and improved plantability or singulation. The addition of biologicals, pesticides, identifying colorants or dyes, and/or other active ingredients including polymers can be included in this process. Refer to sections 3.8 and 6.81.

(5) Raw seed: seed that is free of any applied materials.

(6) Treated seed: seed with a minimal covering of various materials whose primary objective is to reduce or control certain disease organisms, insects or other pests attacking the seed or seedlings growing therefrom and that contains identifying colorants or dyes.

22 Obtaining the working sample

The working sample on which the actual analysis is performed shall be taken from the submitted sample in such a manner that it will be representative. A suitable type of mechanical divider (conical, centrifugal, riffle, etc.) should be used. To avoid damage when dividing large-seeded crop kinds such as beans, peas, etc., prevent the seeds from falling great distances onto hard surfaces. When dividing coated, encrusted, and pelleted seeds, mechanical dividers may be used only if the distance of the fall does not damage the applied materials.

For seed moisture determination, sub-samples must be drawn quickly to avoid exposing the seeds to the ambient air. Mechanical dividers are not appropriate for this purpose. Refer to section 2.2 b (3).

a. Mechanical dividers. — This method is suitable for most kinds of seeds. The apparatus divides a sample into two approximately equal parts. The submitted sample is mixed by passing it through the divider, recombining the two parts and passing the whole sample through a second time and similarly a third time. After

mixing, the sample shall be reduced by passing the seed through the divider repeatedly, removing half the sample on each occasion. This process of successive halving is continued until a working sample of approximately, but not less than the minimum weight(s) stated in Table 2A is obtained.

Use of compressed air or a vacuum is highly recommended for cleaning mechanical dividers.

(1) Centrifugal divider (Garnet type): This divider is suitable for all kinds of seed though it is not recommended for oilseeds (such as rapeseed, canola, mustards, flax) and kinds susceptible to damage (such as peas, soybeans, etc) and the extremely chaffy types.

The divider makes use of centrifugal force to mix and scatter seeds over the dividing surface. The seed flows downward through a hopper onto a shallow rubber cup or spinner. Upon rotation of the spinner by an electric motor the seeds are thrown out by centrifugal force and fall downward. The circle or area where the seeds fall is equally divided into two parts by a stationary baffle so that approximately half the seeds fall in one spout and half in the other spout. The centrifugal divider tends to give variable results when not carefully operated, and therefore the following procedure must be used:

(a) Preparation of the apparatus:
- (i) Level the divider using the adjustable feet.
- (ii) Check the divider and four containers for cleanliness. Note that seeds can be trapped under the spinner and become a source of contamination.

(b) Sample mixing:
- (i) Place a container under each spout.
- (ii) Feed the whole sample into the hopper; when filling the hopper, the seed must always be poured centrally.
- (iii) After the sample has been poured into the hopper, the spinner is operated and the seed passes into the two containers. Turn off spinner.
- (iv) Full containers are replaced by empty containers. The contents of the two full containers are fed centrally into the hopper together, the seed being allowed to blend as it flows in. The spinner is operated.
- (v) The sample mixing procedure is repeated at least once more.

(c) Sample reduction:
- (i) Full containers are replaced by empty containers. The contents of one full container are set aside and the contents of the other container are fed into the hopper. The spinner is operated.
- (ii) The successive halving process is continued until the working sample(s) of not less than the minimum weight(s) required stated in Table 2A are obtained.

(iii) Ensure that the divider and containers are clean after each mixing operation.

(2) Soil/Riffle divider: This divider is suitable for most kinds of seed. For round-seeded kinds such as *Brassica* species, the collection containers should be covered to prevent the seeds from bouncing out.

This divider consists of a hopper with attached channels or ducts, a frame to hold the hopper, four collection containers and a pouring pan. Ducts or channels lead from the hopper to the collection containers, alternate ones leading to opposite sides. Riffle dividers are available in different sizes for different sizes of seed. The width and number of channels and spaces are important. The minimum width of the channels must be at least two times the largest diameter of the seed or any possible contaminants being mixed.

This apparatus, similar to the centrifugal divider, divides the sample into approximately equal parts.

(a) Preparation of the apparatus:

(i) Place the riffle divider on a firm, level clean surface. Ensure the divider is level.

(ii) Ensure that the divider and the four sample collection containers are clean. Check all channels, joints and seams of the divider and collection containers to ensure there are no seeds or other plant matter present before each use.

(iii) Two clean empty collection containers shall be placed under the channels to receive the mixed seed.

(b) Sample mixing:

(i) Pour the whole sample into the divider by running the seed backwards and forwards along the edge of the divider so that all the channels and spaces of the divider receive an equal amount of seed.

(ii) The two full containers shall be replaced with two clean empty containers.

(iii) The contents of one full container shall be poured into the divider by holding the long edge of the pan against the long edge of the riffle hopper and then rotating the bottom up so that the seeds pour across all channels at the same time, followed by the other full container using the same procedure.

(iv) This process of mixing the entire submitted sample shall be repeated at least one more time before successive halving begins.

(c) Sample reduction:

(i) The contents of one full container are set aside. Empty containers are placed under each channel, and the contents of the other container is poured into the hopper by holding the long edge of the pan against the

(a) Preparation of the apparatus: Ensure that two trays, spatula and spoon are clean.

(b) Sample mixing:

(i) The sample is poured uniformly over a tray with a side to side swinging motion.
(ii) The receiving pan should be kept level.
(iii) This mixing procedure is repeated a minimum of three times.

(c) Sample reduction:

(i) A tray, a spatula and a spoon with a straight edge are required. After the preliminary mixing, pour the seed evenly over the tray with a side-toside swing, alternately in one direction and at right angles to it. The depth of the seed in the pan shall not exceed the height of the vertical sides of the spoon. Do not shake the tray thereafter.
(ii) With the spoon in one hand, the spatula in the other, and using both, remove small portions of seed from not less than five random places on the tray.
(iii) Sufficient portions of seed are taken until the working sample(s) of not less than the minimum weight(s) required stated in Table 2A are obtained.

(2) Hand-halving method: This method can be used when a proper mechanical divider is not available.

Procedure:

(a) Seed is poured evenly onto a clean smooth surface.
(b) The sample shall be thoroughly mixed using a flat-edged spatula and placed into a pile.
(c) The pile shall be divided in half using a straight edge or ruler.
(d) Each half portion is divided in half.
(e) Each of the portions is divided into half again. There are now eight portions.
(f) Arrange the eight portions into two rows of four.
(g) Alternate portions should be combined to obtain two halves e.g. combine the first portion from row I with the second portion from row 2. Remove the remaining four portions.
(h) Repeat steps (a) to (g) until sufficient portions of seed are taken to constitute a working sample(s) of not less than the minimum weight(s) required stated in Table 2A are obtained.

(3) For seed moisture determination, mix the submitted sample by tumbling or shaking the submitted sample bag, then open bag and use a spoon to remove portions from several random locations within the bag to obtain the appropriate working weight for one replicate. Place seeds in a moisture testing container. Repeat the procedure of mixing and sampling for the second replicate. Do not expose the sample to ambient air for more than one minute.

SECTION 12: MECHANICAL SEED COUNT

The following method shall be employed when using a mechanical seed counter to determine the number of seeds contained in a sample of soybean *(Glycine max),* corn *(Zea mays),* wheat *(Triticum aestivum)* and field bean *(Phaseolus vulgaris).*

12.1 Samples.

Samples for testing shall be of at least 500 grams for soybean, corn and field beans and 100 grams for wheat and received in moisture proof containers. Samples shall be retained in moisture proof containers until the weight of the sample prepared for purity analysis is recorded.

12.2 Seed counter calibration.

The seed counter shall be calibrated daily prior to use.

(a) Prepare a calibration sample by counting 10 sets of 100 seeds. Visually examine each set to insure that it contains whole seeds. Combine the 10 sets of seeds to make a 1,000 seed calibration sample. The seeds of the calibration sample should be approximately the same size and shape as the seeds in a sample being tested. If the seeds in a sample being tested are noticeably different in size or shape from those in the calibration sample, prepare another calibration sample with seeds of the appropriate size and shape. Periodically re-examine the calibration samples to insure that no seeds have been lost or added.

(b) Carefully pour the 1,000 seed calibration sample into the seed counter. Start the counter and run it until all the seeds have been counted. The seeds should not touch as they run through the counter. Record the number of seeds as displayed on the counter read out. The seed count should not vary more than ±2 seeds from 1,000. If the count is not within this tolerance, clean the mirrors, adjust the feed rate and/or reading sensitivity. Rerun the calibration sample until it is within the ±2 seed tolerance. If the seed counter continues to fail the calibration procedure and the calibration sample has been checked to ensure that it contains 1,000 seeds, do not use the counter until it has been repaired.

12.3 Sample preparation.

Immediately after opening the moisture proof container, mix and divide the submitted sample, in accordance with section 2.2, to obtain a sample for purity analysis and record the weight of this sample in grams to the appropriate number of decimal places (refer to section 2.3 a). Conduct the purity analysis to obtain pure seed for the seed count test.

RULES FOR TESTING SEEDS

12.4 Conducting the test.

After the seed counter has been calibrated, test the pure seed portion from the purity test and record the number of seeds in the sample.

12.5 Calculation of results.

Calculate the number of seeds per pound to the nearest whole number using the following formula:

$$\text{Number of seeds per pound} = \frac{453.6 \text{ g/lb} \times \text{no. of seeds counted in d.}}{\text{weight (g) of sample analyzed for purity}}$$

12.6 Tolerances for results from different laboratories.

Multiply the labeled seed count or first seed count test result by four percent for soybean samples, two percent for corn (round, flat or plateless) samples, five percent for field bean samples and three percent for wheat samples. Express the tolerance (the number of seeds) to the nearest whole number. Consider the results of two tests in tolerance if the difference, expressed as the number of seeds, is equal to or less than the tolerance.

Example:

Kind of seed: Corn
Label claim (1st test): 2275 seed/lb.

Lab Test (2nd test): Purity working weight = 500.3 g
Seed count of pure seed = 2479 seeds

$$\text{Number of seeds per pound} = \frac{453.6 \text{ glib} \times 2479 \text{ seeds}}{500.3 \text{ g}} = 2247.6 \text{ seeds/lb}$$

Rounded to the nearest whole number = 2248 seeds/lb

Calculate tolerance value for corn:

multiply label claim by 2%
2275 seeds/lb x 0.02 = 45.5 seeds/lb;
rounded to the nearest whole number = 46 seeds/lb

Determine the difference between label claim and lab test:

2275 seeds/lb — 2248 seeds/lb = 27 seeds/lb

The difference between the lab test (2nd test) and the label claim (1st test) is less than the tolerance (27 < 46); therefore, the two results are in tolerance.

Slide 1

NIST HANDBOOK 133
New Procedure for Testing Seed Count

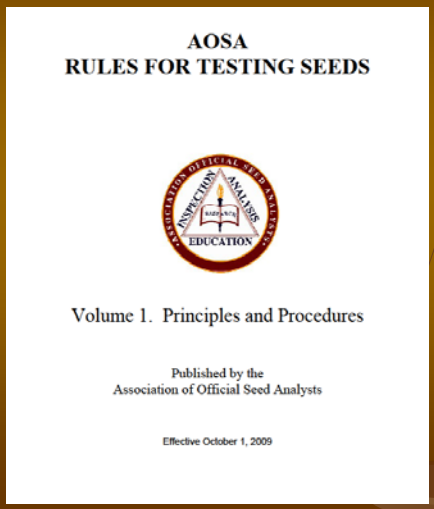
WWMA Call for Repeal
of
Action Taken at 95th Annual Meeting of
National Conference on Weights & Measures
Re:
Testing Procedures for Seed Count

Presented January 24, 2011, by
Kurt Floren
Director of Weights & Measures
County of Los Angeles, California

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Slide 2

Association of Official Seed Analysts
"Rules for Testing Seeds"



AOSA: Official nationwide association of seed analysts, formed in 1908 in response to actions by individual states to develop seed laws.

Members include state, federal & university seed labs of U.S. and Canada.

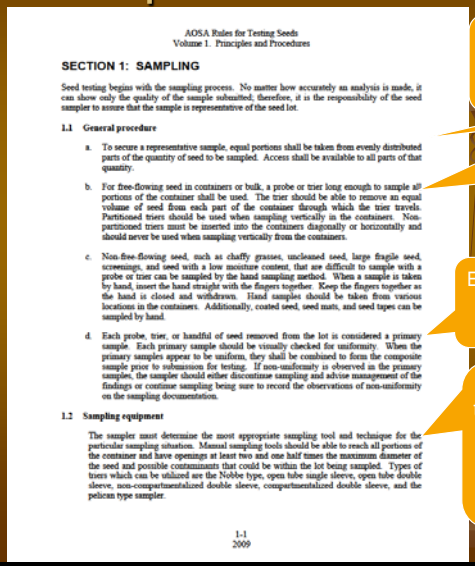
Primary Functions:

- Establish AOSA Rules for Testing Seeds, adopted by most states as seed rules
- Contribute to refinement & modification of rules and procedures for seed testing
- Ensure procedures are standardized between analysts and between labs
- Influence and assist in enforcement of appropriate seed legislation at state and federal levels

2

Slide 3

Procedure does **NOT** start with simple count of 10 groups of 100



AOSA Rules for Testing Seeds
Volume 1. Principles and Procedures

SECTION 1: SAMPLING

Seed testing begins with the sampling process. No matter how accurately an analysis is made, it can show only the quality of the sample submitted; therefore, it is the responsibility of the seed sampler to assure that the sample is representative of the seed lot.

1.1 General procedure

a. To secure a representative sample, equal portions shall be taken from evenly distributed parts of the quantity of seed to be sampled. Access shall be available to all parts of that quantity.

b. For free-flowing seed in containers or bulk, a probe or trier long enough to sample all portions of the container shall be used. The trier should be able to remove an equal volume of seed from each part of the container through which the trier travels. Partitioned triers should be used when sampling vertically in the containers. Non-partitioned triers must be inserted into the containers diagonally or horizontally and should never be used when sampling vertically from the containers.

c. Non-free-flowing seed, such as chaffy grasses, uncleaned seed, large fragile seed, screenings, and seed with a low moisture content, that are difficult to sample with a probe or trier can be sampled by the hand sampling method. When a sample is taken by hand, insert the hand straight with the fingers together. Keep the fingers together as the hand is closed and withdrawn. Hand samples should be taken from various locations in the containers. Additionally, coated seed, seed mats, and seed tapes can be sampled by hand.

d. Each probe, trier, or handful of seed removed from the lot is considered a primary sample. Each primary sample should be visually checked for uniformity. When the primary samples appear to be uniform, they shall be combined to form the composite sample prior to submission for testing. If non-uniformity is observed in the primary samples, the sampler should either discontinue sampling and advise management of the findings or continue sampling being sure to record the observations of non-uniformity on the sampling documentation.

1.2 Sampling equipment

The sampler must determine the most appropriate sampling tool and technique for the particular sampling situation. Manual sampling tools should be able to reach all portions of the container and have openings at least two and one half times the maximum diameter of the seed and possible contaminants that could be within the lot being sampled. Types of triers which can be utilized are the Nobbe type, open tube single sleeve, open tube double sleeve, non-compartmentalized double sleeve, compartmentalized double sleeve, and the pelican type sampler.

1-1
2009

To secure a representative sample, **equal portions** shall be taken **from evenly distributed parts**....

...a **probe or trier**...shall be used... able to remove an equal volume... from each part of the container...

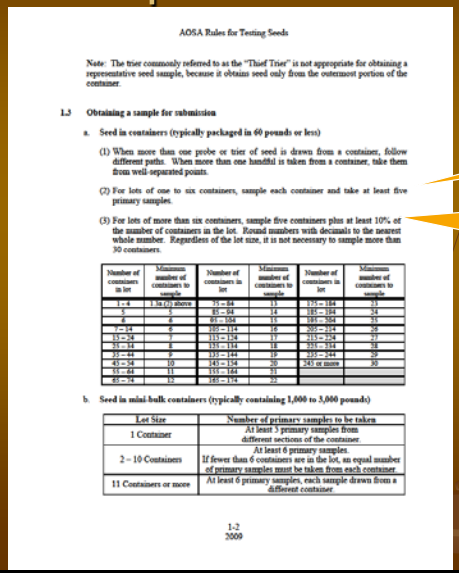
Each probe, trier, or handful... is considered a primary sample. Each should be visually checked for uniformity.

...determine the most appropriate tool and technique...Manual sampling tools should be able to reach all portions of the container and have openings at least 2½ times the maximum diameter of... seed and possible contaminants...

3

Slide 4

Procedure does **NOT** start with simple count of 10 groups of 100



AOSA Rules for Testing Seeds

Note: The trier commonly referred to as the "Thief Trier" is not appropriate for obtaining a representative seed sample, because it obtains seed only from the outermost portion of the container.

1.3 Obtaining a sample for submission

a. **Seed in containers (typically packaged in 60 pounds or less)**

(1) When more than one probe or trier of seed is drawn from a container, follow different paths. When more than one handful is taken from a container, take them from well-separated points.

(2) For lots of one to six containers, sample each container and take at least five primary samples.

(3) For lots of more than six containers, sample five containers plus at least 10% of the number of containers in the lot. Round numbers with decimals to the nearest whole number. Regardless of the lot size, it is not necessary to sample more than 30 containers.

Number of containers in lot	Minimum number of containers to sample	Number of containers in lot	Minimum number of containers to sample	Number of containers in lot	Minimum number of containers to sample
1 – 4	1 lb (1) above	75 – 84	13	225 – 184	23
5	5	85 – 94	14	185 – 194	24
6	6	95 – 104	15	195 – 204	25
7 – 14	7	105 – 114	16	205 – 214	26
15 – 24	8	115 – 124	17	215 – 224	27
25 – 34	9	125 – 134	18	225 – 234	28
35 – 44	9	135 – 144	19	235 – 244	29
45 – 54	10	145 – 154	20	245 or more	30
55 – 64	11	155 – 164	21		
65 – 74	12	165 – 174	22		

b. **Seed in mini-bulk containers (typically containing 1,000 to 3,000 pounds)**

Lot Size	Number of primary samples to be taken
1 Container	At least 3 primary samples from different sections of the container.
2 – 10 Containers	At least 6 primary samples. If fewer than 6 containers are in the lot, an equal number of primary samples must be taken from each container.
11 Containers or more	At least 6 primary samples, each sample drawn from a different container.

1-2
2009

For lots of one to six containers, sample each...
...take at least five primary samples

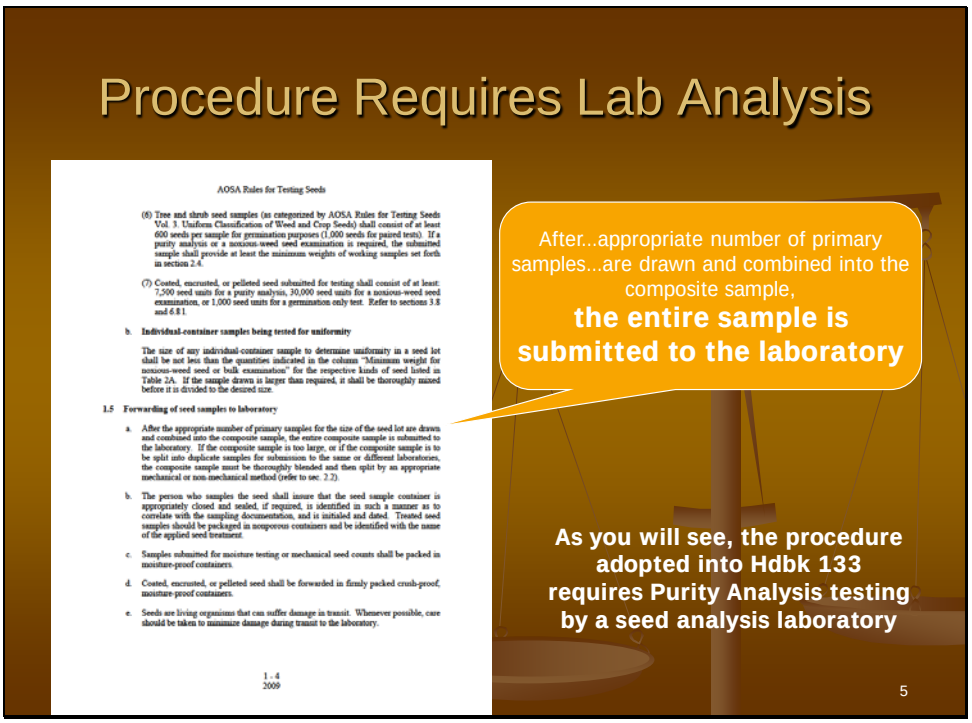
For lots of more than six containers, Sample five...plus at least 10% of the number of containers in the lot. *(up to 30 primary samples)*

Samples are drawn to form composite sample.

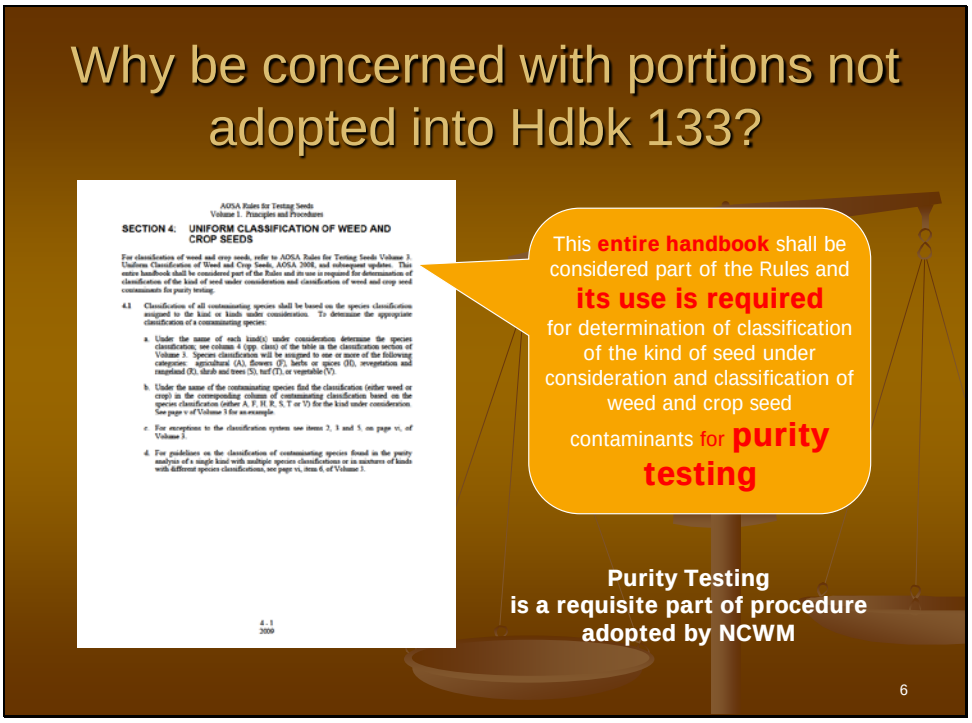
All of this is required for Purity Analysis

4

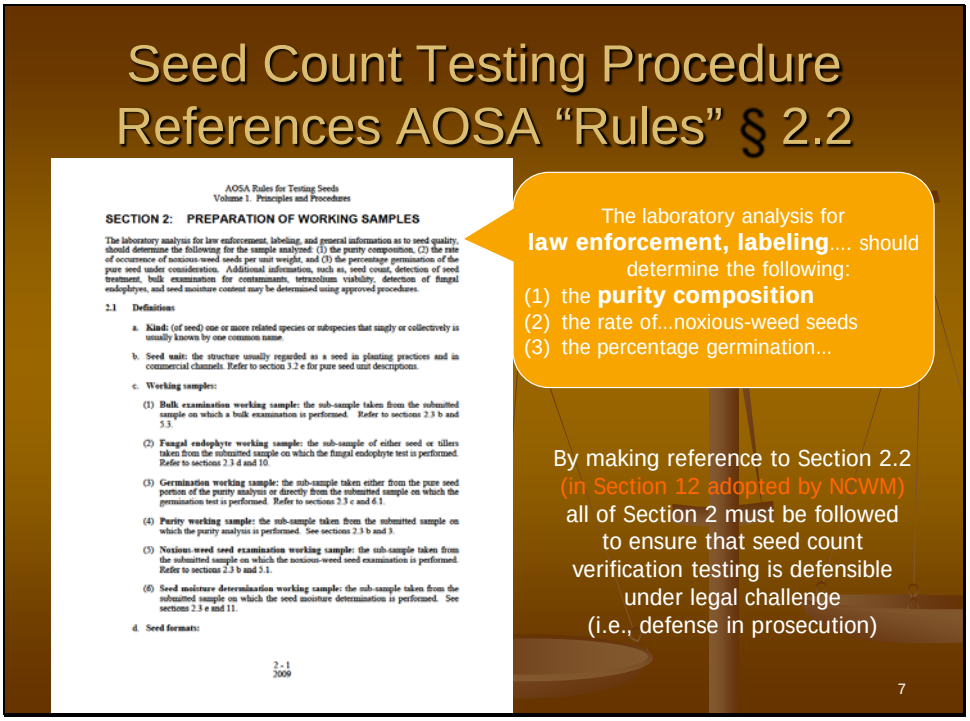
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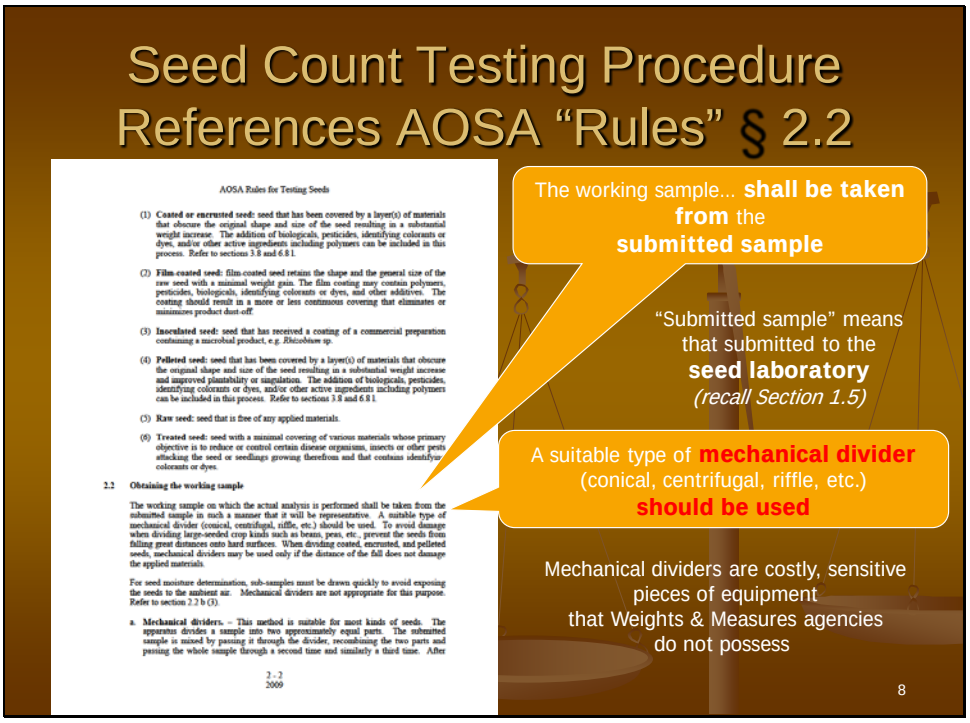
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Examples of Mechanical Dividers



Dividing seed with mechanical divider

Preliminary research re: cost of Centrifugal Divider: $2400 - $3000

Centrifugal divider photos from AOSA presentation to IPSA



Dividing seed with mechanical divider



Riffle Divider: ~ $400 - $700

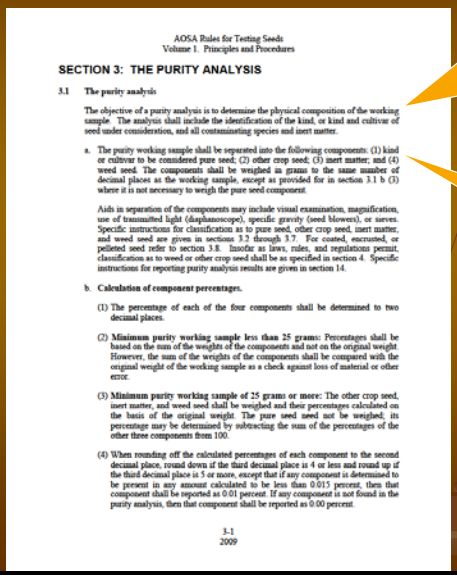
Boerner Divider: ~ $1500 - $1600



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Purity Analysis: Only The Basics



AOSA Rules for Testing Seeds
Volume 1. Principles and Procedures

SECTION 3: THE PURITY ANALYSIS

3.1 The purity analysis

The objective of a purity analysis is to determine the physical composition of the working sample. The analysis shall include the identification of the kind, or kind and cultivar of seed under consideration, and all contaminating species and inert matter.

a. The purity working sample shall be separated into the following components: (1) kind or cultivar to be considered pure seed; (2) other crop seed; (3) inert matter; and (4) weed seed. The components shall be weighed in grams to the same number of decimal places as the working sample, except as provided for in section 3.1 b (3) where it is not necessary to weigh the pure seed component.

Aids in separation of the components may include visual examination, magnification, use of transmitted light (diaphanoscope), specific gravity (seed blowers), or sieves. Specific instructions for classification as to pure seed, other crop seed, inert matter, and weed seed are given in sections 3.2 through 3.7. For coated, encrusted, or pelleted seed refer to section 3.8. Insofar as laws, rules, and regulations permit, classification as to weed or other crop seed shall be as specified in section 4. Specific instructions for reporting purity analysis results are given in section 14.

b. **Calculation of component percentages.**

(1) The percentage of each of the four components shall be determined to two decimal places.

(2) **Minimum purity working sample less than 25 grams:** Percentages shall be based on the sum of the weights of the components and not on the original weight. However, the sum of the weights of the components shall be compared with the original weight of the working sample as a check against loss of material or other error.

(3) **Minimum purity working sample of 25 grams or more:** The other crop seed, inert matter, and weed seed shall be weighed and their percentages calculated on the basis of the original weight. The pure seed need not be weighed; its percentage may be determined by subtracting the sum of the percentages of the other three components from 100.

(4) When rounding off the calculated percentages of each component to the second decimal place, round down if the third decimal place is 4 or less and round up if the third decimal place is 5 or more, except that if any component is determined to be present in any amount calculated to be less than 0.015 percent, then that component shall be reported as 0.01 percent. If any component is not found in the purity analysis, then that component shall be reported as 0.00 percent.

3-1
2009

...purity analysis...
determine the physical composition of the working sample.
The **analysis shall include** the **identification of the kind... of seed** under consideration, and **all contaminating species and inert matter**

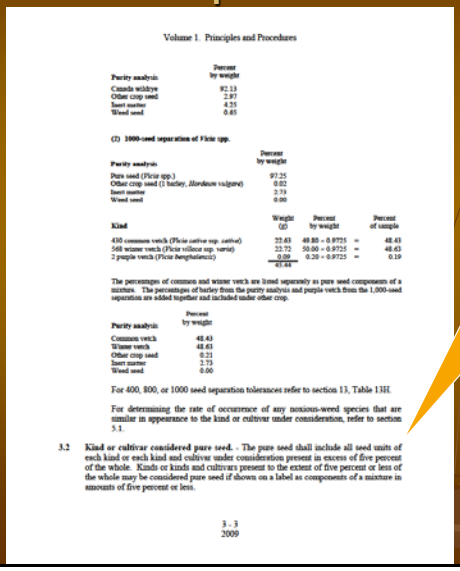
The purity working sample **shall be separated** into the following components:
(1) kind or cultivar to be considered **pure seed**
(2) other crop seed
(3) inert matter, and
(4) weed seed

Requires seed identification expertise not possessed by most W&M officials

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Slide 11

Pure Seed Sample: Required for Count Testing



Volume 1. Principles and Procedures

Purity analysis:	Percent by weight
Canada wildrye	92.13
Other crop seed	2.97
Inert matter	4.55
Weed seed	0.65

(2) 1000-seed separation of *Vicia* spp.

Purity analysis:	Percent by weight
Pure seed (*Vicia* spp.)	97.25
Other crop seed (3 barley, *Hordeum vulgare*)	0.02
Inert matter	2.73
Weed seed	0.00

Kind	Weight (g)	Percent by weight		Percent of sample
430 common vetch (*Vicia sativa* ssp. *sativa*)	23.63	48.80 ÷ 0.9725	=	48.43
568 winter vetch (*Vicia villosa* ssp. *varia*)	22.72	50.00 ÷ 0.9725	=	48.63
2 purple vetch (*Vicia benghalensis*)	0.09	0.20 ÷ 0.9725	=	0.19
	46.44			

The percentages of common and winter vetch are listed separately as pure seed components of a mixture. The percentages of barley from the purity analysis and purple vetch from the 1,000-seed separation are added together and included under other crop.

Purity analysis:	Percent by weight
Common vetch	48.43
Winter vetch	48.63
Other crop seed	0.21
Inert matter	2.73
Weed seed	0.00

For 400, 800, or 1000 seed separation tolerances refer to section 13, Table 13H.

For determining the rate of occurrence of any noxious-weed species that are similar in appearance to the kind or cultivar under consideration, refer to section 5.1.

3.2 **Kind or cultivar considered pure seed.** - The pure seed shall include all seed units of each kind or each kind and cultivar under consideration present in excess of five percent of the whole. Kinds or kinds and cultivars present to the extent of five percent or less of the whole may be considered pure seed if shown on a label as components of a mixture in amounts of five percent or less.

3 - 3
2009

The pure seed shall include all seed units of each kind or each kind and cultivar under consideration…

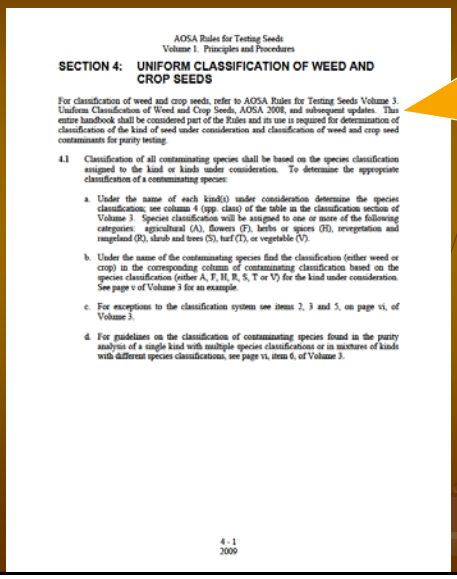
Identification / determination of a PURE SEED sample is critical to the procedure and to demonstration of compliance with the Hdbk 133 procedure…

Are W&M field officials trained, qualified, certified?

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Can't we just count 1,000 seeds?



AOSA Rules for Testing Seeds
Volume 1. Principles and Procedures

SECTION 4: UNIFORM CLASSIFICATION OF WEED AND CROP SEEDS

For classification of weed and crop seeds, refer to AOSA Rules for Testing Seeds Volume 3. Uniform Classification of Weed and Crop Seeds, AOSA 2008, and subsequent updates. This entire handbook shall be considered part of the Rules and its use is required for determination of classification of the kind of seed under consideration and classification of weed and crop seed contaminants for purity testing.

4.1 Classification of all contaminating species shall be based on the species classification assigned to the kind or kinds under consideration. To determine the appropriate classification of a contaminating species:

a. Under the name of each kind(s) under consideration determine the species classification; see column 4 (spp. class) of the table in the classification section of Volume 3. Species classification will be assigned to one or more of the following categories: agricultural (A), flowers (F), herbs or spices (H), revegetation and rangeland (R), shrub and trees (S), turf (T), or vegetable (V).

b. Under the name of the contaminating species find the classification (either weed or crop) in the corresponding column of contaminating classification based on the species classification (either A, F, H, R, S, T or V) for the kind under consideration. See page v of Volume 3 for an example.

c. For exceptions to the classification system see items 2, 3 and 5, on page vi, of Volume 3.

d. For guidelines on the classification of contaminating species found in the purity analysis of a single kind with multiple species classifications or in mixtures of kinds with different species classifications, see page vi, item 6, of Volume 3.

4 - 1
2009

RECALL:

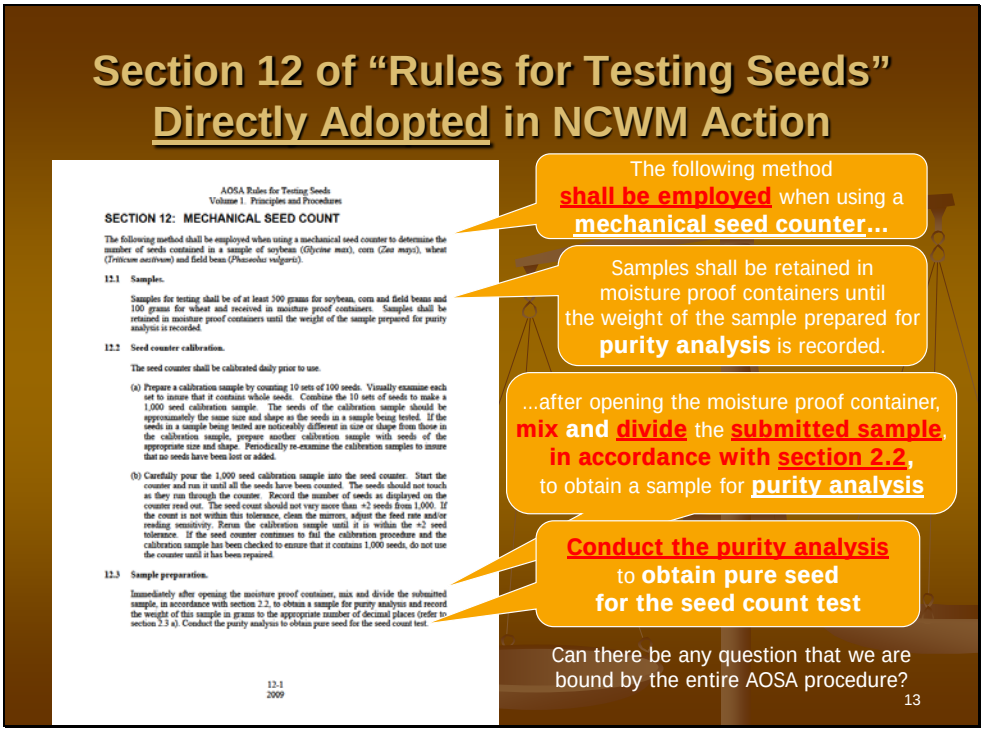
This **entire handbook** shall be considered **part of the Rules** and **its use is required** for determination of classification of the kind of seed under consideration and classification of weed and crop seed contaminants **for purity testing**

The procedure adopted by NCWM specifically requires calibration of mechanical seed counter using seed from a Pure Seed sample……

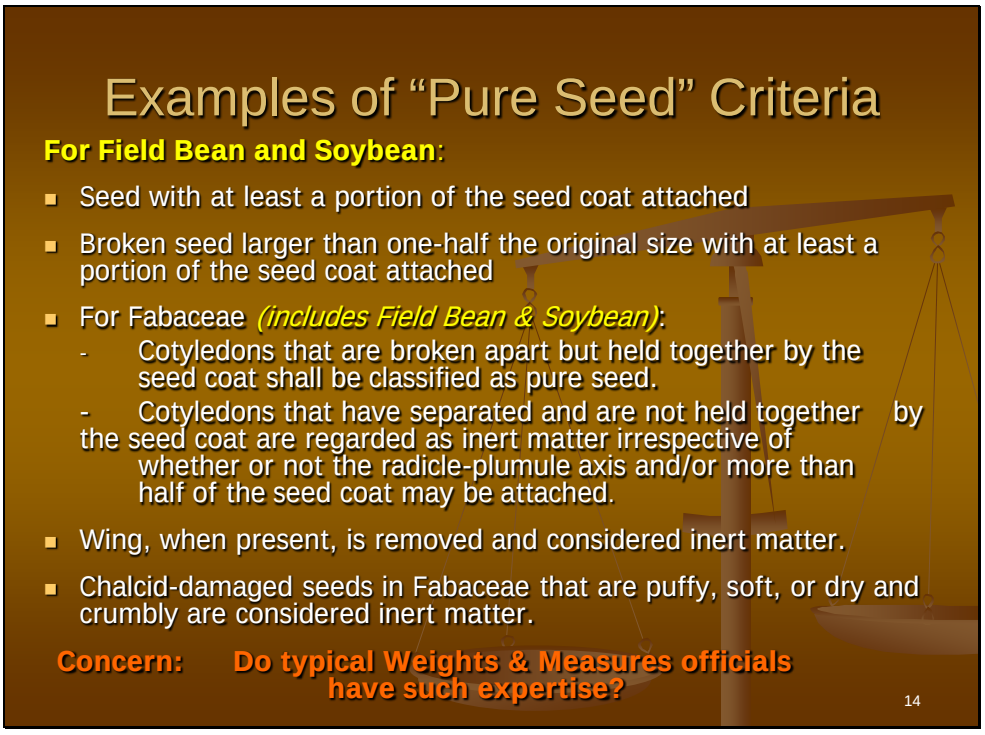
Section 12.4 (Adopted in Hdbk 133)**: "After the seed counter has been calibrated, test the pure seed portion from the purity test…"**

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Examples of "Pure Seed" Criteria

For Corn:

- Multiple floret, with or without awn, provided a caryopsis with some degree of endosperm development can be detected (either by slight pressure or by examination over light).
- Caryopsis or piece of broken caryopsis larger than one-half of the original size

Special Consideration:

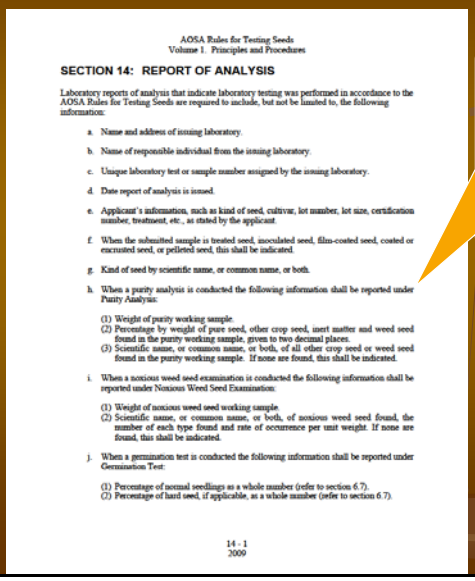
* A fertile floret attached to another fertile floret shall be separated
* Attached glumes and empty florets shall be removed and classified as inert matter.

Concern: Again, does the average W&M official have such expertise?

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Purity Analysis: Seed Identification



AOSA Rules for Testing Seeds
Volume 1. Principles and Procedures

SECTION 14: REPORT OF ANALYSIS

Laboratory reports of analysis that indicate laboratory testing was performed in accordance to the AOSA Rules for Testing Seeds are required to include, but not be limited to, the following information:

a. Name and address of issuing laboratory.
b. Name of responsible individual from the issuing laboratory.
c. Unique laboratory test or sample number assigned by the issuing laboratory.
d. Date report of analysis is issued.
e. Applicant's information, such as kind of seed, cultivar, lot number, lot size, certification number, treatment, etc., as stated by the applicant.
f. When the submitted sample is treated seed, inoculated seed, film-coated seed, coated or encrusted seed, or pelleted seed, this shall be indicated.
g. Kind of seed by scientific name, or common name, or both.
h. When a purity analysis is conducted the following information shall be reported under Purity Analysis:
(1) Weight of purity working sample.
(2) Percentage by weight of pure seed, other crop seed, inert matter and weed seed found in the purity working sample, given to two decimal places.
(3) Scientific name, or common name, or both, of all other crop seed or weed seed found in the purity working sample. If none are found, this shall be indicated.
i. When a noxious weed seed examination is conducted the following information shall be reported under Noxious Weed Seed Examination:
(1) Weight of noxious weed seed working sample.
(2) Scientific name, or common name, or both, of noxious weed seed found, the number of each type found and rate of occurrence per unit weight. If none are found, this shall be indicated.
j. When a germination test is conducted the following information shall be reported under Germination Test:
(1) Percentage of normal seedlings as a whole number (refer to section 6.7).
(2) Percentage of hard seed, if applicable, as a whole number (refer to section 6.7).

14 - 1
2009

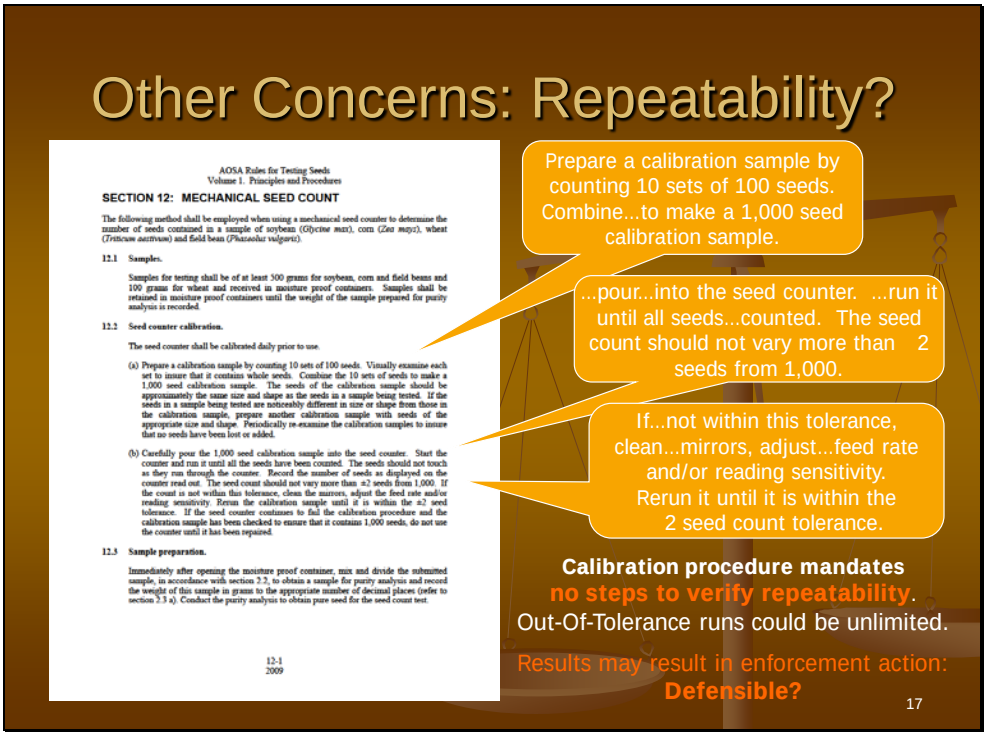
When a purity analysis is conducted, the **following shall be reported** under **Purity Analysis:**
(1) Weight of purity working sample
(2) Percentage…of pure seed, other crop seed, inert matter, and weed seed…
(3) Scientific name, or common name, or both, of all other crop seed or weed seed found…

Seed Analysts typically work 4-5 years in a seed laboratory to gain expertise to independently conduct seed analyses…

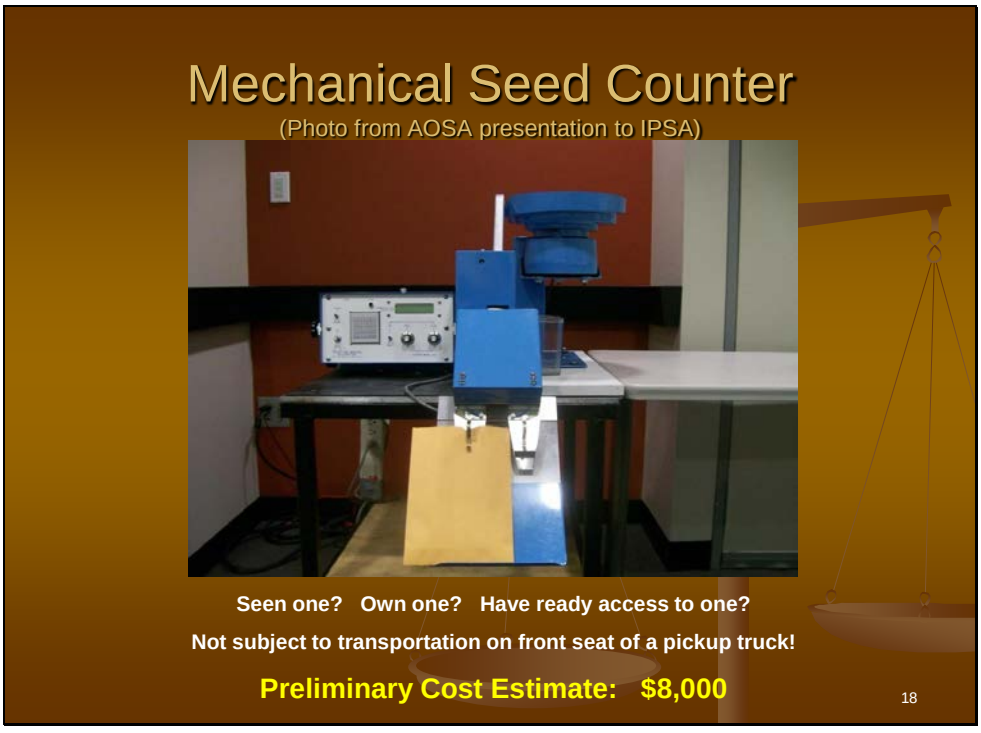
What percentage of Weights & Measures officials are qualified?
ANY?

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Example of 100-Seed Sampling

(from AOSA presentation to IPSA)



Preparing calibration sample

Does this look like a field activity?

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Other Concerns: Equipment Access? Portability?



Loading and running calibration sample.
(Photos from AOSA presentation to IPSA)

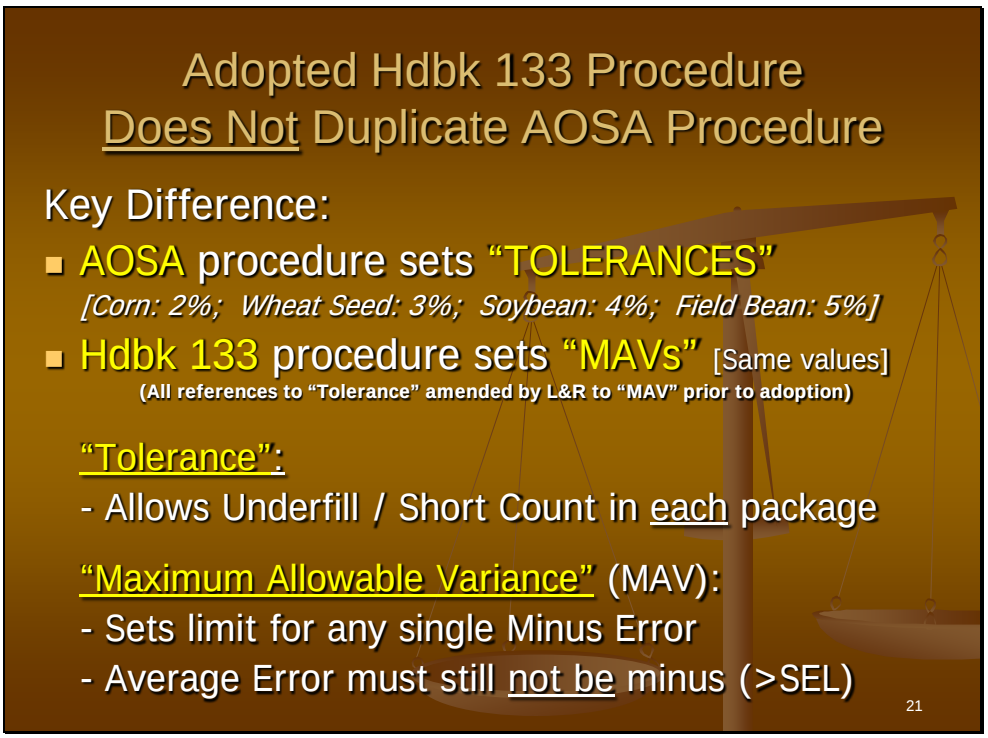


Use of mechanical seed counter is clearly not a field operation.

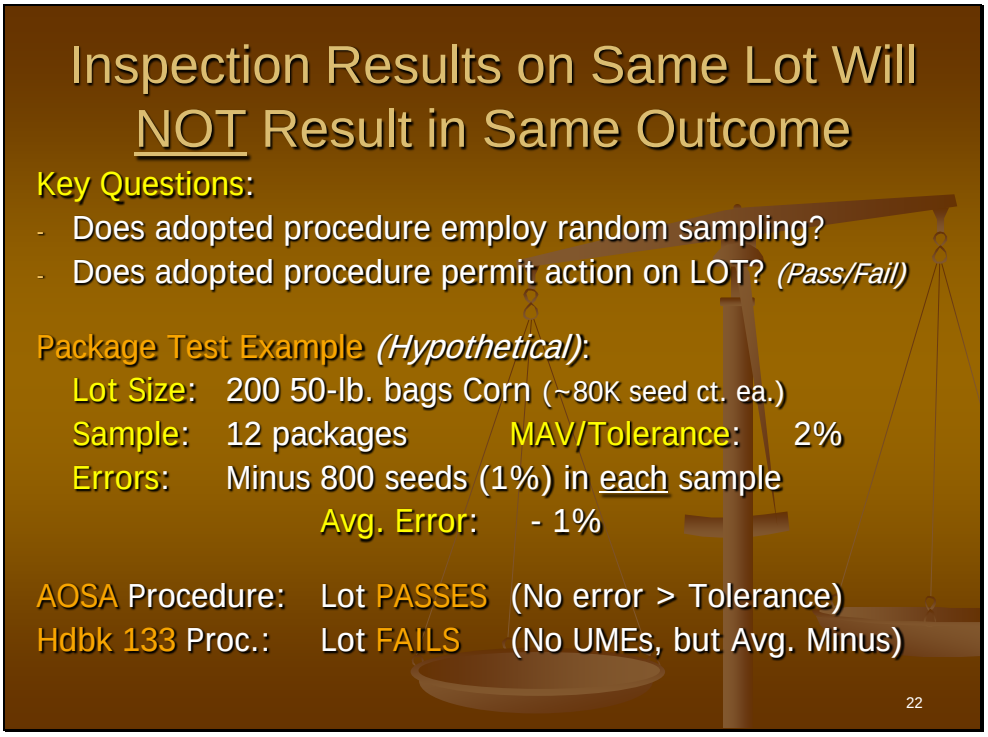
Equipment and analysis procedures are laboratory activities.

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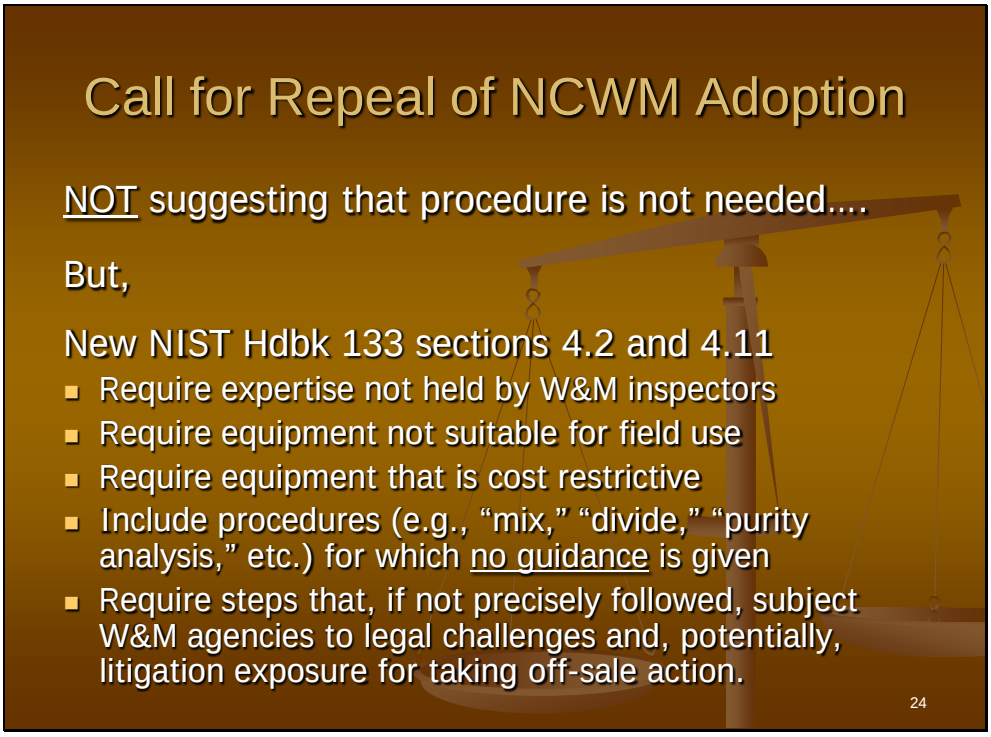
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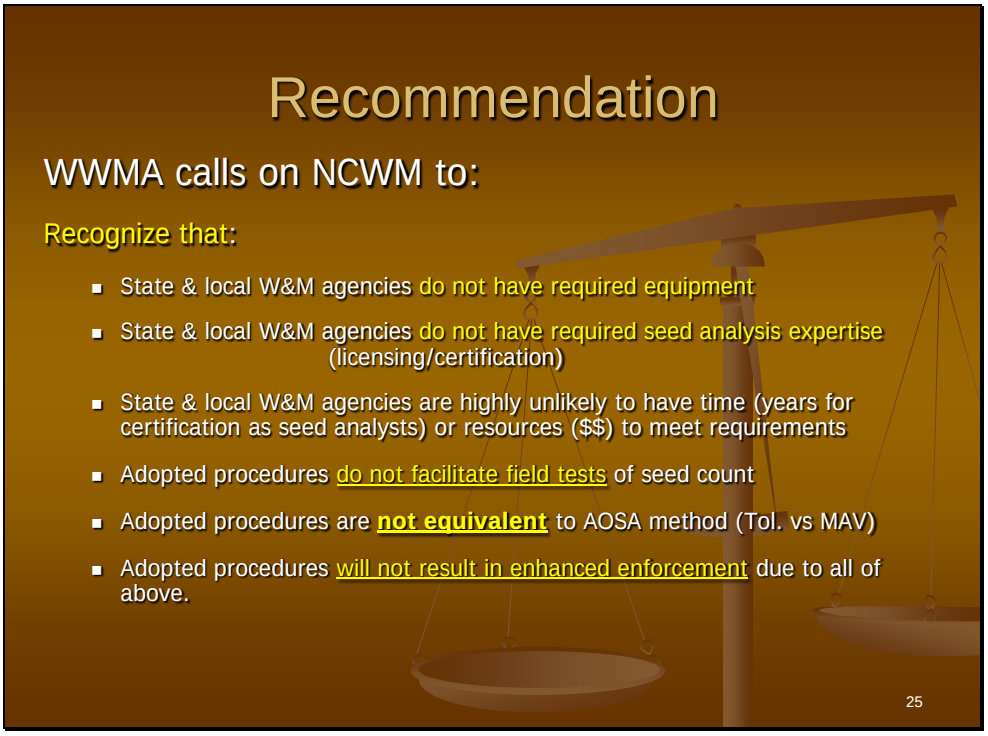
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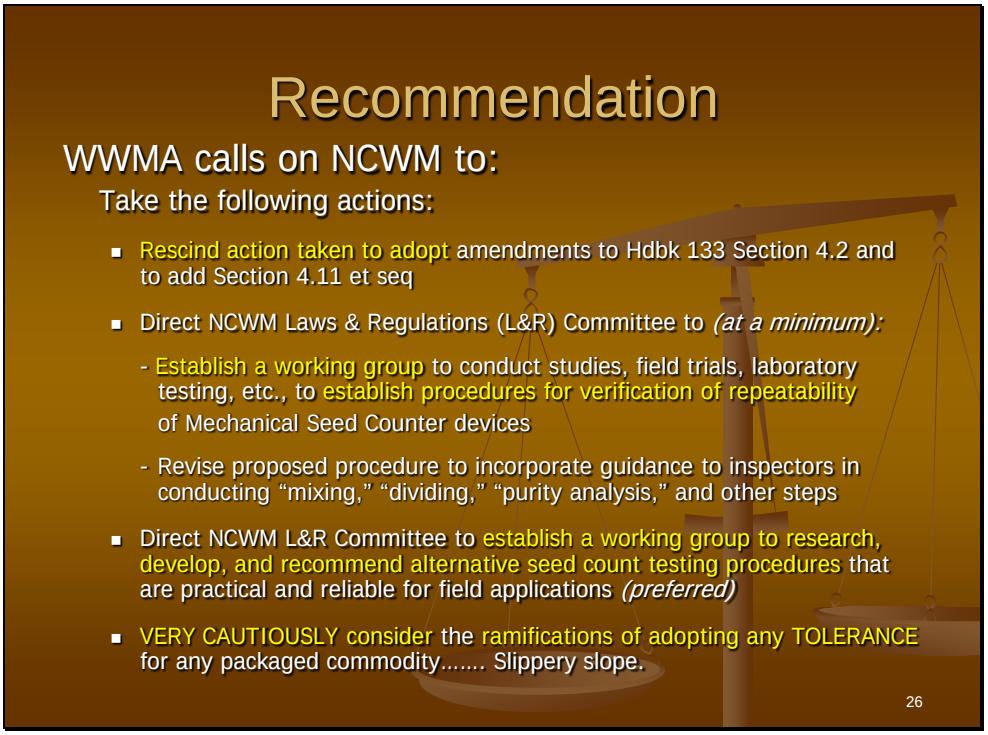
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Thank You
Re: Call for Repeal of Seed Count Procedure
Questions?
Comments?
27



AASCO

Association of American Seed Control Officials

January 5, 2010

John Gaccione
Chairman, NCWM Laws & Regulations Committee
c/o Westchester County Dep't of Weights & Measures
112 East Post Road, 4th floor
White Plains, NY 10601

RE: Seed Count Rule for Agricultural Seeds

Dear Mr. Gaccione:

The Association of American Seed Control Officials (AASCO) has recently learned that there has been a petition from the Western Weights and Measures Association to rescind the seed count rule for agricultural seeds in Handbook 133. We respectfully urge you not to rescind this rule and we ask for your continued support of this rule as adopted by the National Conference of Weights and Measures (NCWM) in July 2010.

As stated last year in our letter to NCWM; Seed is a biological unit and as such, it is subject to environmental influences that introduce variation in size and density. Seed cannot be produced utilizing a standardized manufacturing process that controls size and density. Utilizing a process of referee testing and scientific review, The Association of Official Seed Analyst, has established in the Rules for Testing Seed, acceptable testing methods and variances for Corn, Soybeans, Field Beans, and Wheat that are recognized and utilized by state seed control officials in the administration of their respective state seed laws. These standards are also acceptable to the regulated seed industry as a fair and valid means for determining that their products are in compliance with the respective state seed laws.

The primary objective of the AASCO is to promote uniformity in the administration of seed laws. We feel that by rescinding this rule our efforts to promote uniformity between regulatory agencies would be greatly diminished. Further, with variations in seed count methodology being applied by seed regulatory officials, an unnecessary hardship will be created for the agriculture seed industry without tangible benefits to the end users. As such, the AASCO respectfully requests that existing rules used to establish seed counts and in harmony with rules established by the Association of Official Seed Analyst Rules for Testing Seed be left in place and not be rescinded.

Best Regards,

Ronald R. Pence
President – AASCO

Assistant Administrator, Commodity Inspection Division
Oregon Dept. of Agriculture
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Salem, Oregon 97301-2532

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GREG HELMBRECHT
Treasurer
Wisconsin Department of Agr., Trade, & Consumer Protection
P. O. Box 8911
Madison, WI 53708-8911
Tel. 608-224-4596

Appendix I

Item 260-3: Handbook 133, Moisture Allowance for Pasta Products

Section 2.3.8. Moisture Allowance

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National Pasta Association, Moisture Loss in Pasta Presentation at the NCWM Annual Meeting (M. Hermida, July 23, 2011) ..... L&R - I17

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Warfield, Lisa

From: Hermida, Maile G. [maile.hermida@hoganlovells.com]
Sent: Thursday, June 23, 2011 2:08 PM
To: John.Albert@mda.mo.gov
Cc: Gaccione, John; Don Onwiler; Warfield, Lisa; Sefcik, David; Steinborn, Steven B.
Subject: NCWM Agenda Item 260-3
Attachments: L&R 260-3 - Letter and Additional Information from NPA.pdf; NDSU Study Protocol.PDF; Background Information on NDSU Study.pdf; Quantitiative Values.pdf

John,

Please find attached a letter from the National Pasta Association providing additional information regarding NCWM Agenda Item 260-3. We are sharing this supplemental information in response to requests received during the Laws & Regulations Committee's open hearing at CWMA's annual meeting. Specifically, we are providing three background documents regarding the published study about moisture loss conducted by North Dakota State University.

We are copying NCWM and NIST so that this information also may be shared with the NCWM Laws & Regulations Committee and other interested members of the Conference. Please feel free to forward this information to other members of CWMA and the CWMA Laws & Regulations Committee.

If you have any questions or if you would like to discuss this issue further, please contact either Steve Steinborn or me.

Thank you.

Maile

Maile Gradison Hermida
Attorney at Law

Hogan Lovells US LLP
Columbia Square
555 Thirteenth Street, NW
Washington, DC 20004

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Email: maile.hermida@hoganlovells.com
www.hoganlovells.com

Please consider the environment before printing this e-mail.



June 23, 2011

By Electronic Mail

John Albert
Chair, Laws and Regulations Committee
Central Weights and Measures Association
c/o Missouri Department of Agriculture
PO Box 630
1616 Missouri Boulevard
Jefferson City, Missouri 65102

Re: Laws & Regulations Committee Agenda Item 260-3

Dear Mr. Albert:

The National Pasta Association (NPA) appreciated the opportunity to present information about Laws & Regulations Committee Agenda Item 260-3 at the Central Weights and Measures Association's annual meeting last month. As we discussed at the meeting, the proposed 3% gray area for moisture loss in pasta is well-supported by both published and industry data. In response to CWMA's request for additional information in advance of NCWM's annual meeting, we are providing three documents regarding the published study about moisture loss in pasta conducted by North Dakota State University.

First, we are providing a detailed listing of the specific quantitative values captured by the North Dakota State University study. This data shows the net weight for the pasta samples during each month of the study. While the NDSU study included graphs illustrating these data, we thought it may be helpful for the Conference to see the specific quantitative data points. The study found that pasta packaged in paperboard lost a maximum 5.02% of its weight at retail and that pasta packaged in flexible polyethylene bags lost a maximum of 3.18% of its net weight at retail.

Second, enclosed is the protocol for the study, which explains the survey design, methodology, and specifications. This information shows that the study was the result of a carefully considered process and underscores the validity and significance of the study's results.

Finally, we are providing a background document prepared at the time the study was published that explains the purpose of the study and provides context for the study's findings. We believe this document may be helpful in considering the weight of the study's results. The document explains that the parameters selected for the study were not "worst case" situations for net weight variation.

As we have previously presented, the nature of pasta, the packaging necessary to allow for gain or loss of moisture to ensure product quality, and the pasta distribution cycle are unchanged since the

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North Dakota State University study was conducted. NPA's petition also provided more recent company-specific data that validates the relevance of the original study to today's marketplace.

Given the interest in this information by the attendees at the CWMA meeting, we are copying the NCWM so that these documents also may be made available to other interested members of the Conference. We appreciate CWMA's interest in Agenda Item 260-3. NPA is hopeful that with support of the Central region and the Conference as a whole, this modest but important change to Handbook 133 will be adopted this year. If you would like to discuss this issue further, you can reach Steve Steinborn at (202) 637-5969 or steven.steinborn@hoganlovells.com and Maile Hermida at (202) 637-5428 or maile.hermida@hoganlovells.com.

Sincerely,

Steve Steinborn
Partner, Hogan Lovells
Counsel to National Pasta Association

Maile Gradison Hermida
Associate, Hogan Lovells
Counsel to National Pasta Association

cc: Don Onwiler, Executive Director, NCWM
John Gaccione, Chair, NCWM Laws & Regulations Committee
Lisa Warfield, NIST
David Sefcik, NIST

EXHIBIT III

PROTOCOL

NATIONAL PASTA ASSOCIATION (NPA)

SURVEY OF NET WEIGHT VARIATIONS IN PASTA PRODUCTS

A. INTRODUCTION

On August 8, 1980, The Food and Drug Administration (FDA) proposed amendments in the Federal Register for net weight labeling regulations which would quantitatively define permissible variations from stated net weights for several food categories, including foods subject to moisture loss. While recognizing that macaroni and noodle products have been reported to lose moisture during storage, FDA proposed no moisture loss tolerance for pasta products.

1. Purpose of Survey

The purpose of this survey is to provide data in support of NPA's request that a specific tolerance be established that recognizes, as reasonable and permissible, variations between the stated net weight and actual net weight of pasta products, such variations being due to the loss of moisture in pasta products during product distribution.

2. Background

The proposed NPA survey is based on (a) FDA survey of moisture loss in flour packaged in Kraft paper bags, (b) FDA guidelines for moisture loss surveys, (c) guidance offered NPA by FDA

officials on March 30, 1981, (d) 1981 NPA Packaging Survey (Exhibit I), and (e) Foremost-McKesson's R&D study (Exhibit II). The R&D study shows the influence of various storage conditions on net weight variations of different pasta products (macaroni, noodle, etc.) and package sizes.

3. Survey Design

Commercially produced and packaged pasta will be examined for net weight and moisture variations under environmental conditions normally encountered in the U.S. grocery product distribution system.

Single case quantities of test product produced by two different manufacturers and packaged in the industry's most common package size and types will be randomly selected at the manufacturing locations and shipped to selected storage locations. Each test production shipment will be accompanied by ten empty packages to be used for determining tare weight.

Sample packages and empty packages will be weighed at appropriate intervals throughout the survey. Product moisture will be determined only at the beginning of the survey. Moisture assays will be done in duplicate from a single sample package taken adjacent to the sample cases.

Moisture determinations and the collection, interpretation, and presentation of data will be under the direction of Dr. Joel W. Dick of the North Dakota State University.

The survey design is summarized in Table 1.

B. SURVEY COMPONENTS

1. Product

Enriched spaghetti (21 CFR 139.115(c)) will be used as the test product in the present survey. The use of a single product is justified by the fact that spaghetti (a) responds to environmental conditions in a manner typical of other pasta products, shapes, and sizes (Exhibit II) and (b) is the industry's leading product in terms of per capita consumption (SAMI data FYE 1981, nearly one half retail sale was spaghetti).

2. Packaging Materials

The two most popular consumer packages will be studied in this survey: paperboard cartons and flexible bags. Construction and moisture vapor transmission data along with closure and sealing methods are presented in Exhibit I.

3. Package Size

Because net weight variation during storage has been found to be independent of package size (Exhibit III), the survey will be limited to the most popular package size -- 16 ounce.

4. Manufacturers

Product packaged in flexible bags (24 per case) will be supplied by the Skinner Macaroni Company.

Product packaged in paperboard cartons (20 per case) will be supplied by the C. F. Mueller Company.

5. Storage Facilities and Test Locations

Two warehouse and one retail facility will be used throughout the survey.

The storage facilities will be located in the Minneapolis and New York City Metropolitan areas.

6. Duration of Survey

The survey will encompass all seasonal cycles over a 12-month period for each warehouse and retail location.

C. METHODOLOGY

1. Identification Codes

A sample code will be affixed to each individual retail package by a pressure-sensitive label. Label information will include:

Manufacturing facility location
Sample code number
Manufacturing date
Statement - "TEST SAMPLE - NOT FOR SALE"

Each manufacturer will be assigned an identification code number. The shipping case will have labels containing the above information attached to all six sides.

2. Net Weight Determination

a. Tare Weight

The total weight of ten empty packages (including any coupons, etc.) will be divided by a factor of ten to determine the average tare weight.

b. Gross Weight

The total weight to the nearest 0.1g of each sample package will be recorded as the gross weight.

c. Net Weight

The tare weight will be subtracted from the gross weight to obtain the net weight of the product.

d. Frequency

Gross weights and tare weights are to be determined immediately after selecting and labeling sample units at the manufacturing plant, upon receipt at the storage facility, and bi-monthly for a period of 12 consecutive months at each warehouse and retail location.

e. Weighing Scale

All test locations will use the same type of scale: Ohaus model 750-S, Triple Beam Balance with Stainless Steel Plate (6"), 610 gram (21.52 oz.) metric capacity, sensitivity 0.1g.

f. Calibration Check

Prior to each set of weighings, scales will be calibrated using a 500 g Class M2 (or C) brass weight.

3. Moisture Determination

a. Moisture Assays

Will be conducted in duplicate for each sample unit according to the AOAC Official Method (14.04 Cereal Lab/Flour-Oven Method) within 24 hours of receipt.

b. Sample Containers

Special widemouth, rubber lined screw cap, mason-type 8 ounce glass jars will be used.

c. Frequency

Product samples will be analyzed for moisture at the beginning of the study.

d. Sample Units

Each product will be sampled in duplicate. One sample will be submitted to the North Dakota State University for assay. The duplicate sample will be retained pending confirmation of sample receipt and analysis.

4. Environmental Readings

a. Measurements of the ambient temperature (^{O}F) and the relative humidity will be recorded in the record-log each time samples are weighed.

b. Method of environmental system control (heat or air conditioning by gas, electricity, etc.) for each storage area will be noted in the record-log.

c. Weather conditions and unusual conditions of handling, storage, etc., will be noted in the record-log.

5. Record Keeping

a. All test locations will be provided with appropriate forms to record data.

b. Manufacturing sites will record sample identification, tare weights, gross weights, temperature, relative humidity, and any unusual conditions.

c. Storage locations will record identification, tare weights, gross weights, temperature, relative humidity, and any unusual conditions.

d. Copies of all records and data are to be mailed to: Dr. Joel W. Dick at the North Dakota State University.

D. CONCLUSION

1. Data Tabulation

The North Dakota State University will tabulate the data accumulated over the 12 month period.

2. Report

Final data will be assembled, interpreted, and presented in appropriate report form by the North Dakota State University to the NPA Standards Committee.

3. FDA Presentation

NPA will present the results of this survey to the Food and Drug Administration as evidence supporting a request for an allowance for moisture loss for pasta products during commercial distribution.

May 14, 1982

Table 1

NPA NET WEIGHT SURVEY DESIGN

PRODUCT	SPAGHETTI					
MANUFACTURER	C. F. MUELLER			SKINNER		
PACKAGE	PAPERBOARD CARTON, 16 OZ.			FLEXIBLE BAG, 16 OZ.		
SAMPLE SIZE	ONE CASE OF 20 PACKAGES AT EACH STORAGE LOCATION			ONE CASE OF 24 PACKAGES AT EACH STORAGE LOCATION		
STORAGE FACILITY	WAREHOUSE		RETAIL	WAREHOUSE		RETAIL
TEST LOCATIONS	MPLS. AREA	NYC AREA	NYC AREA	MPLS. AREA	NYC AREA	NYC AREA
GROSS WEIGHT	EACH SAMPLE PACKAGE WEIGHED AT MANUFACTURING PLANT, UPON RECEIPT AT STORAGE FACILITY, AND [redacted]-MONTHLY FOR ONE YEAR					
TARE WEIGHT	AVERAGE OF TEN EMPTY PACKAGES WEIGHED AT MANUFACTURING PLANT, UPON RECEIPT AT STORAGE FACILITY, AND [redacted]-MONTHLY FOR ONE YEAR					
MOISTURE	PRODUCT MOISTURE TO BE DETERMINED AT BEGINNING OF THE SURVEY					
CONTROL	DATA COLLECTION, INTERPRETATION, AND PRESENTATION TO BE DIRECTED BY DR. JOEL W. DICK, NORTH DAKOTA STATE UNIVERSITY					

MPLS. = Minneapolis - St. Paul Metropolitan Area

NYC = New York City - New Jersey Metropolitan Area

L&R Agenda Item 260-3: Moisture Loss in Pasta

Frequently Asked Questions

1) *Why do inspectors need to consider moisture loss?*

A lawful inspection must take account of moisture loss for any product where moisture loss occurs, such as pasta. Federal (and corresponding state) requirements mandate that "reasonable variations caused by loss or gain of moisture during the course of good distribution practice or by unavoidable deviations in good manufacturing practice" must be recognized before the jurisdiction can determine the accuracy of the net weight statement.

The U.S. Supreme Court in the case of *Jones v. Rath Packing Company* held that the Federal Food, Drug, and Cosmetic Act "permits variations from stated weight caused by gain or loss of moisture" and therefore a manufacturer of food "is not subject to enforcement action for violation of the net weight labeling requirements if the label accurately states the net weight, with allowance for the specified reasonable variations" such as moisture loss.

2) *When must an inspector consider moisture loss when checking packaged pasta products?*

Inspectors always must account for moisture loss for pasta because the product will always have the potential to lose moisture. Failure to account for moisture loss for hygroscopic products like pasta renders an inspection invalid. Federal and state law do not permit inspectors to issue a citation, order pasta products off-sale, or issue a civil penalty unless moisture loss has been accounted for by the inspector. This is a well-settled matter of law.

3) *Why should Handbook 133 be amended to address moisture loss for pasta?*

The modest amendment to Handbook 133 would provide inspectors with critical guidance to ensure that pasta product package checking is done properly and lawfully. The industry petition was brought to the Conference because inspectors have mistakenly interpreted the lack of express guidance in Handbook 133 about moisture loss in pasta to mean that they are not required to consider moisture loss for these products. Of course, that is not the case.

4) *Why should the Conference create a special allowance for pasta? Will passage of this proposal open the door to a flood of similar amendments to Handbook 133?*

The pasta industry is not seeking special treatment. The proposal would merely memorialize a well-established moisture loss allowance and assist inspectors in accounting for moisture loss among pasta products, as is the case for flour, dry pet food, meat, and poultry. Indeed, both NIST and FDA have proposed 3% as the appropriate gray area for pasta.

Only a finite number of products are subject to moisture loss and the vast majority of packaged foods do not gain or lose moisture. The Conference should consider proposals from other industries that are able to amass appropriate data that supports a moisture allowance gray area.

5) *How does a moisture allowance work? Why should pasta manufacturers be given a 3% "break" instead of just over-packing?*

Although referred to in shorthand as a "moisture allowance," it is important to recognize that the proposal before the Conference would establish a 3% "gray area." It is not a tolerance. If a sample is found to be less than the labeled weight but within the 3% threshold, the lot is in the "gray" or "no decision" area. This is an indication for inspectors that more information must be collected before lot compliance or noncompliance can be decided. In such situations, inspectors can elect to conduct further investigation to determine whether moisture loss is the basis for the product being short weight. This same method of inspection already exists for flour and pet food, and the modest amendment to Handbook 133 does not introduce a new concept or loophole that favors pasta products.

The Supreme Court's ruling in *Jones v. Rath Packing Company* and subsequent legal precedent, affirms a uniform net weight compliance standard that regulates a manufacturer's conduct at the point-of-pack. *Rath Packing* recognizes that in a national marketplace companies are not required (nor is it feasible) to target package weights by region and climate.

Inherent in the Court's ruling is an understanding that companies are not required to over-pack to address moisture loss that may occur as the result of good distribution practices. The law does not sanction a requirement to target distribution regionally, nor would this approach be practicable for manufacturers to implement.

6) *Is moisture loss really unavoidable for pasta? Why can't you just change your packaging to prevent moisture loss?*

Pasta is hygroscopic, which means that its moisture content does not remain constant after the product is manufactured. Depending on the relative humidity of the atmosphere, pasta will frequently gain or lose moisture even when good manufacturing and distribution practices are followed. The amount of moisture loss depends upon many factors including the shape of the noodles, the packaging material, the length of time it is in distribution, the retail sales environment, and environmental conditions.

Pasta needs "breathability" throughout its life cycle in order to maintain quality because of its hygroscopic nature. Without flexible packaging, dissipating moisture would remain caught in the package. This could result in pasta that fails to cook properly or even could cause it to spoil if subject to extreme temperature changes.

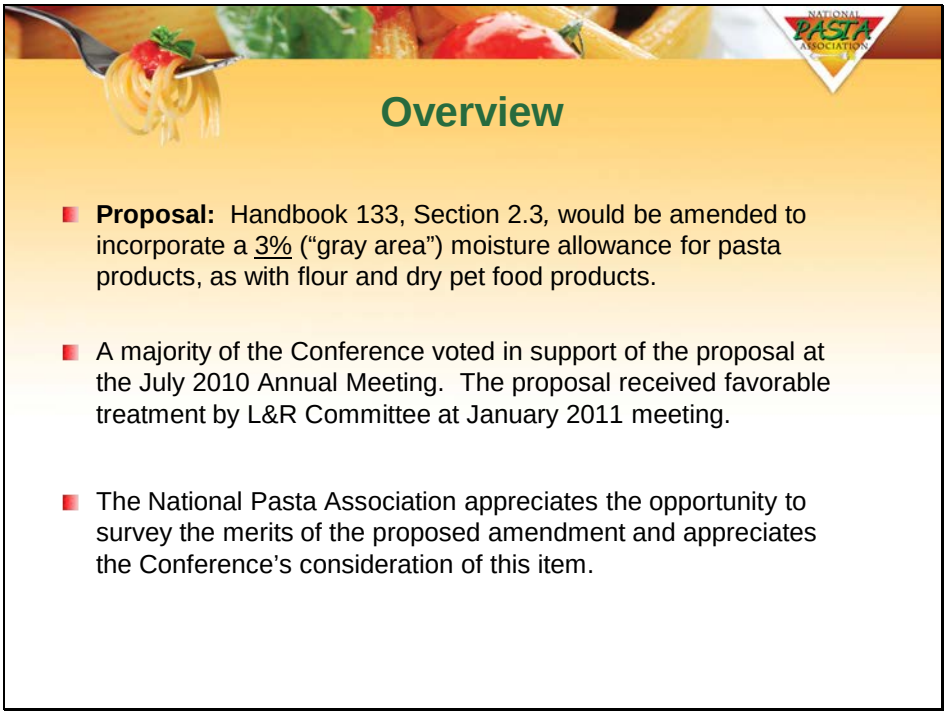
7) *Why is 3% an appropriate level for the gray area?*

The proposed value of 3% has consistently been recognized as an appropriate gray area for pasta products. The FDA and NIST each previously recognized 3% as an appropriate level for moisture loss in pasta. Additionally, the 3% level is supported by a published study conducted by North Dakota State University, commissioned by NPA, which was conducted in 1988 following the guidelines and input from FDA and NIST. More recent company-specific data also validates the findings of the North Dakota State University study and supports the 3% threshold. (Note that some of our data suggests the need for a higher threshold.) This value also is consistent with the gray areas already established in Handbook 133 for flour and pet food, which are similar in their formulations to pasta. The North Dakota State University study and confirming industry data have been presented to the Conference for its review and consideration.

Slide 1



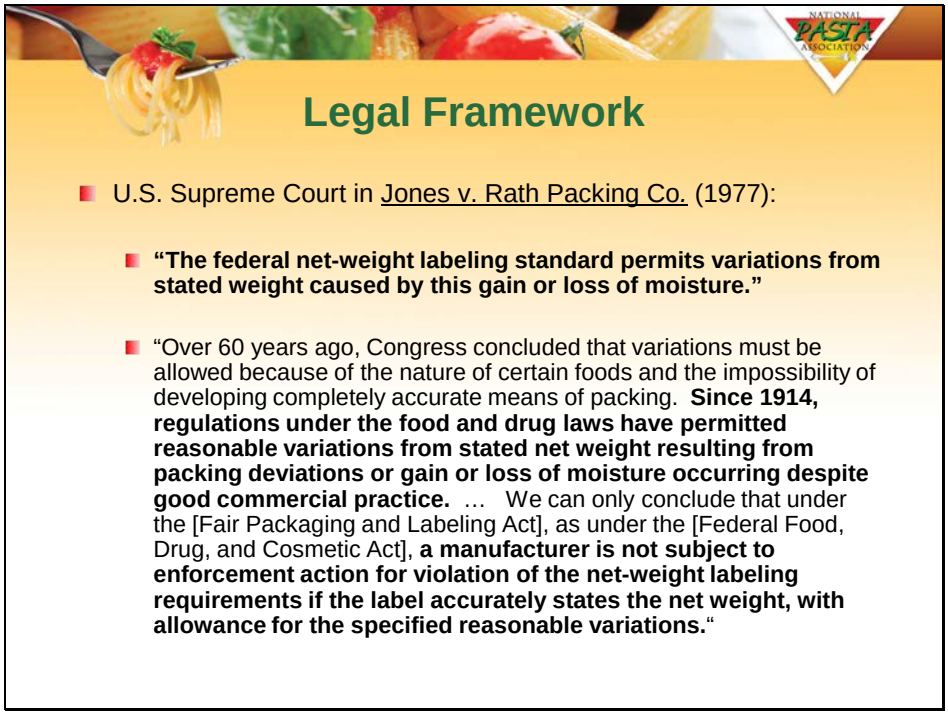
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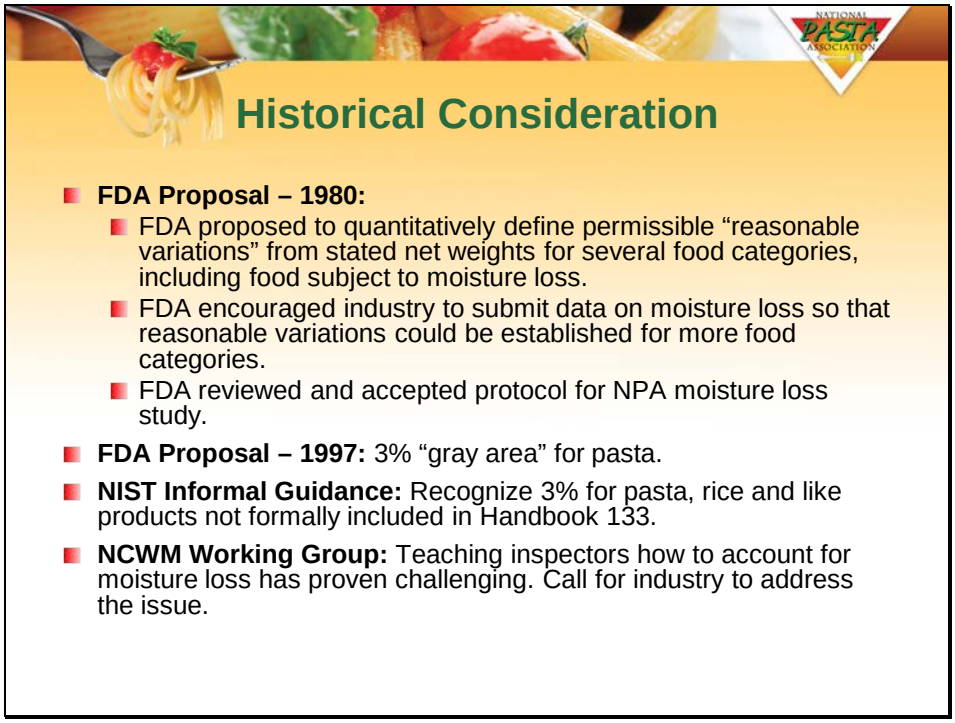
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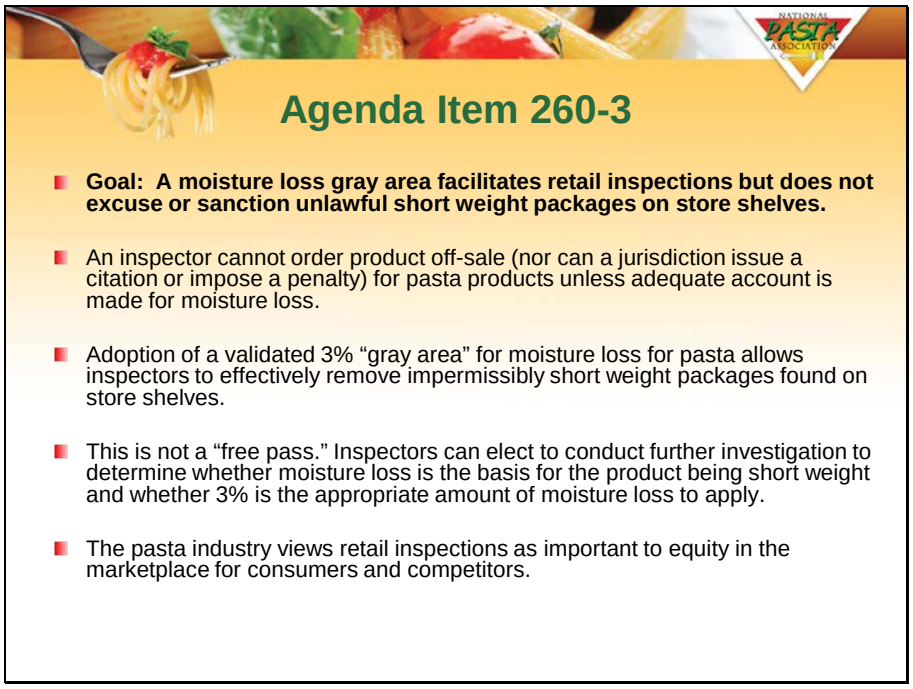
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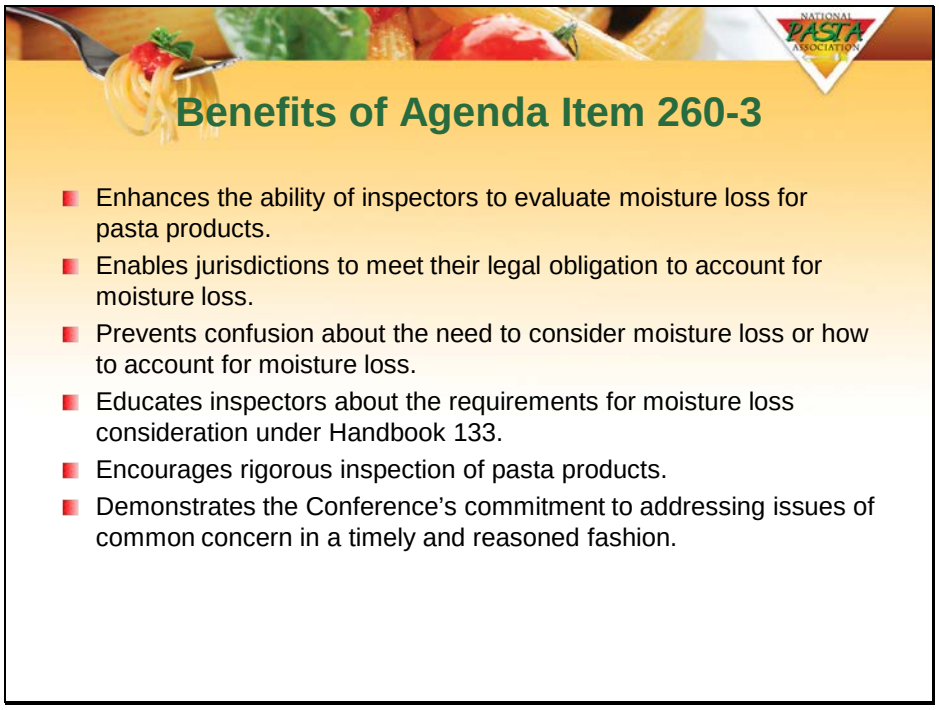
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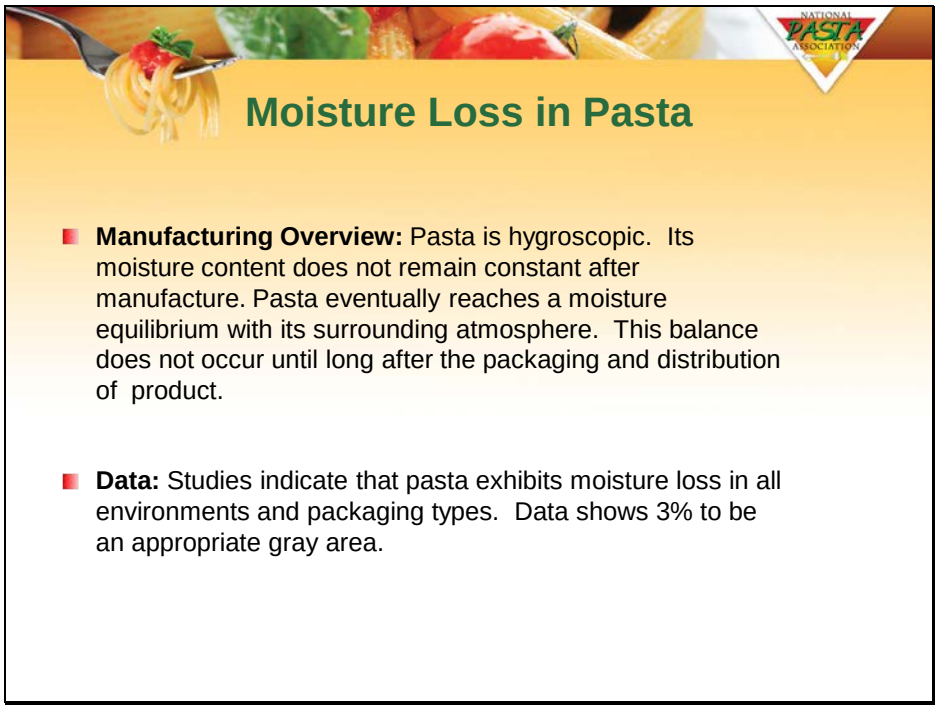
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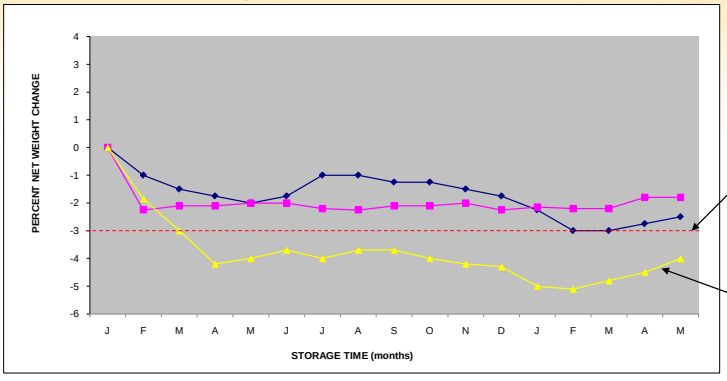
NDSU Published Study

- North Dakota State University designed a controlled study in 1989 in accordance with previous FDA study on moisture loss in flour.
- Packaged pasta loses or gains moisture dependent upon environmental temperature and humidity during storage and distribution.
- At retail, pasta packaged in paperboard lost up to 5.02% of its weight. Pasta packaged in flexible polyethylene bags lost up to 3.18% of its weight.
- Neither product size, shape, composition or source of manufacture showed a significant effect on weight gain or loss. All products met the FDA regulations for pasta moisture at time of pack.

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NDSU Published Study

- Study considered moisture loss at retail and in warehouses (a transient point in the distribution chain—after which additional moisture loss occurs).



Net weight change in spaghetti in paperboard cartons during storage under ambient conditions.

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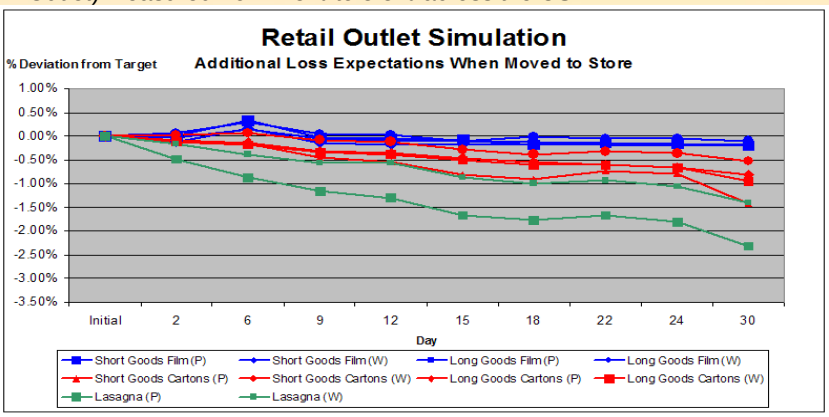
Industry Study 2006 – 2007

- Using a similar design as 1989 Study,
  - >700 samples were pulled
  - 10 major geographic locations
  - 5 manufacturers
  - Throughout summer and winter months
  - Over a one year time period.
- Outcome:
  - 75% of the samples lost moisture between 2.5% - 5.5%.
  - Samples from hot, dry or high altitude locations, and from winter vs. summer weather were significantly more variable.

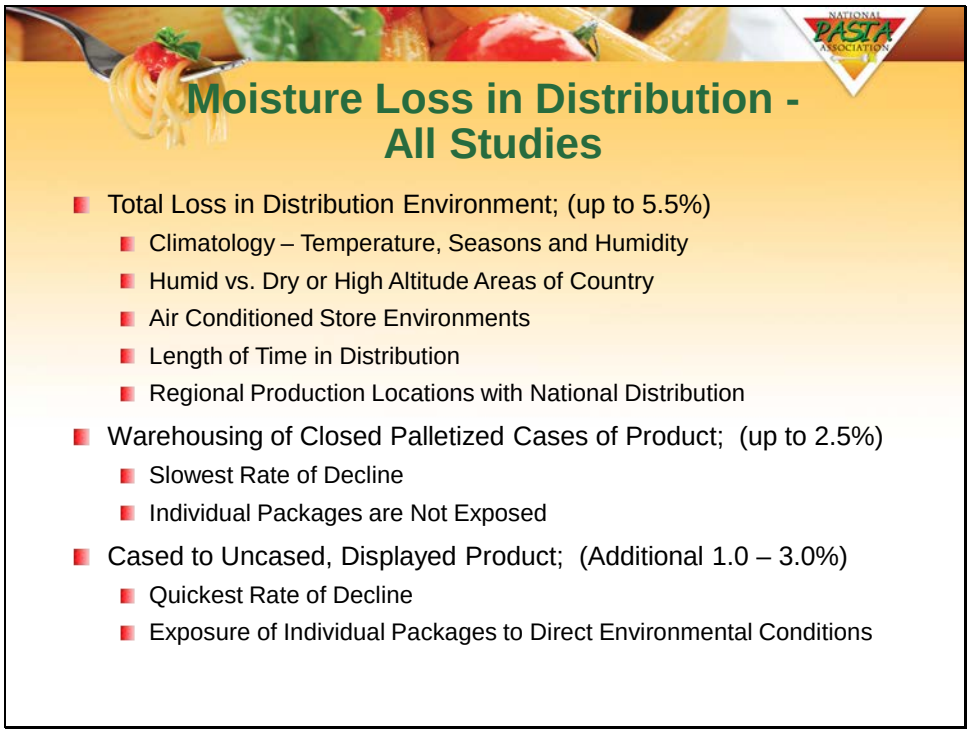
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Impact of Retail Environment
2006-2007 Study

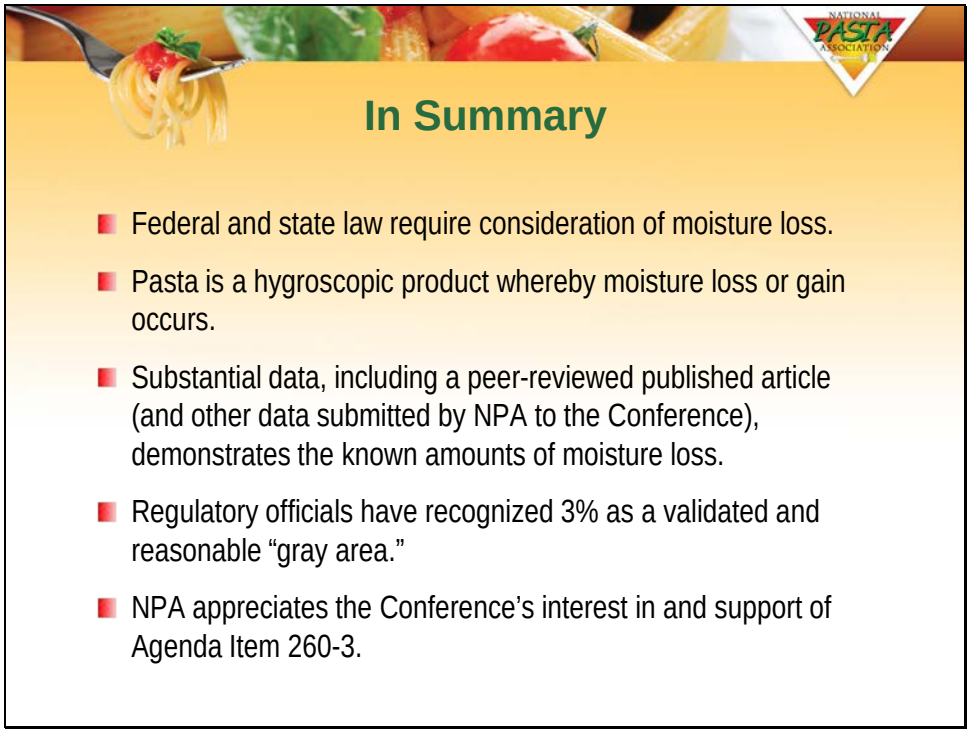
- There is an additional and immediate weight loss when product is moved from a storage warehouse environment to a retail shelf environment.
- Weight Loss through the Total Distribution Life Cycle (Storage + Retail Outlet) measured from 2.5% to 5.5% across the USA.



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Appendix J

Developing Item 270-1: Handbook 130, Engine Fuels and Automotive Lubricants Regulation

Motor Fuel Nozzle Color

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MPCA

Missouri Petroleum Marketers
& Convenience Store Association

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*Active Past President Directors
** Ex-Officio

To: NCWM & CWMA L&R Committees
From: Ronald J. Leone, Executive Director
Date: April 25, 2011
Subject: Motor Fuel Nozzle Color

The Missouri Petroleum Marketers and Convenience Store Association (MPCA) is a 350+ member statewide trade association which represents the majority of the convenience stores, gas stations and petroleum marketers located in and around Missouri.

MPCA fully supports a national motor fuel nozzle color rule designed to reduce misfuelings by making motor fuel nozzle colors consistent, uniform & predictable across the country.

Sincerely,

Ronald J. Leone
MPCA Executive Director
C: 573.864.5189

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Report of the Specifications and Tolerances (S&T) Committee

Steve Giguere, Chairman
Augusta, Maine
Weights and Measures

Reference
Key Number

300 INTRODUCTION

This is the final report of the Committee on Specifications and Tolerances (S&T) (hereinafter referred to as the "Committee") for the 96th Annual Meeting of the National Conference on Weights and Measures (NCWM). The report is based on the Interim Report offered in the NCWM Publication 16, "Committee Reports," testimony at public hearings, comments received from the regional weights and measures associations and other parties, the NCWM 2011 Online Position Forum, the addendum sheets issued at the Annual Meeting, and actions taken by the membership at the voting session of the Annual Meeting.

Table A identifies the agenda and appendix items. The agenda items are identified in the report by Reference Key Number, Item Title, and Page Number. The item numbers are those assigned in the Interim Meeting agenda. Voting items are indicated with a "**V**," or if the item was part of the Voting Consent calendar by the suffix "**VC**" after the item number. Items marked with an "**I**" after the Reference Key Numbers are Informational items. Items marked with a "**D**" after the Key Numbers are Developing items. The Developing designation indicates that an item, while it has merit, may not be adequately developed for action at the national level. Items marked "**W**" have been withdrawn from consideration. Items marked with a "**W**" will generally be referred to the regional weights and measures associations because they either need additional development, analysis, and input or did not have sufficient Committee support to bring them before the NCWM. Table B identifies the acronyms for organizations and technical terms used throughout the report, and Table C provides a summary of the results of the voting on the Committee's items and the report in its entirety.

This report contains recommendations to amend the National Institute of Standards and Technology (NIST) Handbook 44, 2011 Edition, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices." Proposed revisions to the handbook are shown in **bold face print** by ~~**striking out**~~ information to be deleted and **underlining** information to be added. New items proposed for the handbook are designated as such and shown in **bold face print**.

Note: The policy of NIST is to use metric units of measurement in all of its publications; however, recommendations received by the NCWM technical committees have been printed in this publication as submitted. Therefore, the report may contain references to inch-pound units.

Table A
Index to Reference Key Items

Reference Key Number		Title of Item	S&T Page Number
310		**GENERAL CODE**	**S&T - 4**
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310-2	D	G-S.1. Identification. – (Software)	S&T - 7
310-3	V	G-A.6. Nonretroactive Requirements (Remanufactured Equipment)	S&T - 13
320		**SCALES**	**S&T - 18**
320-1	W	T.N.4.5.1. Time Dependence: Class II, III, and IIII Non-automatic Weighing Instruments	S&T - 18
320-2	V	T.N.4.7. Creep Recovery for Load Cells	S&T - 19

321 BELT-CONVEYOR SCALE (BCS) SYSTEMS ..... S&T - 21
321-1 V N.3.1.3. Check for Consistency of the Conveyor Belt Along Its Entire Length ..... S&T - 21
331 VEHICLE-TANK METERS (VTM) ..... S&T - 23
331-1 V S.2.6. Thermometer Well, Temperature Determination ..... S&T - 23
331-2 I T.4. Product Depletion Test ..... S&T - 26
336 WATER METERS ..... S&T - 33
336-1 V Appendix D- Definition of Utility–Type Water Meters ..... S&T - 33
342 FARM MILK TANKS ..... S&T - 35
342-1 V N.5.1. Verification of Master Metering Systems ..... S&T - 35

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S&T Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) – Examples of Repaired Devices/Repaired Elements ..... S&T - B1

S&T Agenda Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) – HB 44 (2010) General and Scales Code List of Nonretroactive Requirements. ..... S&T - B9

Appendix C – Correspondences ..... S&T - C1

S&T Agenda Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) – Letter from PMP ..... S&T - C1
S&T Agenda Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) – Stakeholders Letter from Graffco ..... S&T - C3
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S&T Agenda Item 321-1: Belt-Conveyor Scale Systems - Letter from Thermo Fisher Scientific (2010) ..... S&T - C11
S&T Agenda Item 342-1: Data from Federal Milk Marketers Administration ..... S&T - C13

Table B
Glossary of Acronyms

BCS	Belt-Conveyor Scales	NTETC	National Type Evaluation Technical Committee
CC	Certificate of Conformance	NW&SA	National Weighing and Sampling Association
CWMA	Central Weights and Measures Association	OEM	Original Equipment Manufacturer
EPO	Examination Procedure Outline	Pub 14	NCWM Publication 14
GS	NTETC Grain Analyzer Sector	RMFD	Retail Motor-Fuel Dispenser
GIPSA	Grain Inspection Packers & Stockyards Administration	SI	International System of Units
HB 44	NIST Handbook 44	SMA	Scale Manufacturers Association
HB 130	NIST Handbook 130	SWMA	Southern Weights and Measures Association
LMD	Liquid-Measuring Device	TG	Task Group
LPG	Liquefied Petroleum Gas	WG	Work Group
MS	NTETC Measuring Sector	WIM	Weigh-in-motion
MMA	Meter Manufacturers Association	WMD	NIST Weights and Measures Division
NCWM	National Conference on Weights and Measures, Inc	WS	NTETC Weighing Sector
NEWMA	Northeastern Weights and Measures Association	WWMA	Western Weights and Measures Association
NH_3	Anhydrous Ammonia	USNWG	NIST/OIML U.S. National Working Group
NIST	National Institute of Standards and Technology	VTM	Vehicle-tank Meters
NTEP	National Type Evaluation Program		

"Handbook 44" (HB 44) means the 2010 Edition of NIST Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices"

"Handbook 130" (HB 130) means the 2009 Edition of NIST Handbook 130 (including subsequent amendments), "Uniform Laws and Regulations in the Areas of Legal Metrology and Fuel Quality"

Note: NIST does not imply that these acronyms are used solely to identify these organizations or technical topics.

Table C
Voting Results

Reference Key Number	House of State Representatives		House of Delegates		Results
	Yeas	Nays	Yeas	Nays	
Consent Calendar					
310-1					Adopted
310-3					Adopted
320-2					Adopted
321-1					Adopted
331-1					Adopted
336-1					Adopted
342-1					Adopted
(Report on its Entirety Voice Vote)					Adopted

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

310 GENERAL CODE

310-1 V Provision for Sealing Electronic Adjustable Components

(This item was adopted.)

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

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

Item Under Consideration: At the 2011 NCWM Annual Meeting, the Committee recommended that the interpretation of HB 44 General Code paragraph G-S.8. Provision for Sealing Electronic Adjustable Components as shown below be documented into the Report of the 96th NCWM.

> The current language in paragraph G-S.8. states: "A device shall be designed with provision(s) for applying a security seal that must be broken, or for using other approved means of providing security (e.g., data change audit trail available at the time of inspection), before any change that detrimentally affects the metrological integrity of the device can be made to any electronic mechanism."
>
> Thus, for parameters protected by physical means of security, once a physical security seal is applied to the device, it should not be possible to make a metrological change to those parameters without breaking that seal. Likewise, for parameters protected by electronic means of security, it should not be possible to make a metrological change to those parameters without that change being reflected in the audit trail. Since this

philosophy addresses provisions for protecting access to any metrological adjustment, the philosophy should be applied consistently to all electronic device types.

Background/Discussion: Several years ago, NTEP evaluators inspected some devices that could be sealed in an "adjustment" mode that would allow the user to make adjustments without breaking a physical security seal, and for which the accompanying user's manual provided clear instructions that the physical security seal should not be affixed while the device was in that mode. For example, a switch placing the device in the "adjustment mode" should be set in the "off" position before affixing the physical security seal. Because device owners, including service agents, are required to comply with all user requirements, some NTEP evaluators and applicants believed that these devices complied with G-S.8. NTEP started receiving an increasing number of reports that users and service agents were not following the instructions in the user's manuals for these devices, thus, rendering the method of sealing ineffective. In many cases, this situation went undetected because weights and measures officials do not have access to the users' manuals, and the information was not consistently specified in the NTEP CC.

Since 2008, the NCWM S&T Committees, regional weights and measures associations, NTETC Sectors, and other interested parties considered several proposals intended to address what is considered an effective method of sealing metrological features. The proposals to amend HB 44 paragraph G-S.8. were intended to clarify what is considered an effective method of sealing that would be uniformly applied during type evaluation and field verification. Throughout these deliberations, it became apparent that the issues identified in type evaluation were based upon multiple interpretations of G-S.8., and that a single interpretation was needed and should be distributed to the NTEP laboratories, so that type evaluation procedures for sealing could be reviewed and, if necessary, amended. See the 2008 through 2010 NCWM Annual Reports to review previous language and positions and other background information to amend G-S.8.

At its August 2010 Annual Meeting, the WS: 1) reviewed the sealing procedures in Pub 14 Scales type evaluation checklist and procedures; 2) compared them with similar type evaluation criteria in Pub 14 for LMD; and 3) reviewed applicable HB 44 sealing requirements in the General, Scales, and LMD codes. Prior to the 2010 meeting of the WS, a small WG was formed to develop more detailed procedures for determining compliance of the methods for sealing, and requested the WS consider its recommendations for Pub 14, DES Section 10. The WS reviewed the recommendations. The WS agreed with the revised proposal to amend Pub 14 Scale Section 10 and recommended it be forwarded to the S&T Committee and the SMA for consideration prior to the 2011 NCWM Interim Meeting. The WS also agreed to forward the amended language for Pub 14 to the S&T Committee with a recommendation that the S&T item to amend G-S.8. be Withdrawn from the Committee's agenda. The final summary of the NTETC WS may be found in Appendix C of the NTEP Committee's 2011 Interim Report.

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

During the fall 2010 WWMA Annual Technical Conference, Mr. Darrell Flocken, Mettler Toledo, speaking on behalf of the SMA, restated SMA's position that this item be Withdrawn. Speaking as chairman of the WS, Mr. Flocken restated the history of the issues that initiated the original proposals. At the August 2009 WS meeting, it was noted that there were problems at NTEP weighing labs due to insufficient guidance in Pub 14. Mr. Cook, NIST Technical Advisor to the WS, speaking on behalf of the WS, provided the WWMA with a brief review of the WS recommendations to amend the weighing devices section of Pub 14. The WWMA recommended that this remain an Informational item until the 96th NCWM S&T Committee confirmed that the WS recommendations complied with the previous (95th) Committee's interpretation of General Code paragraph G-S.8.

During its fall 2010 Annual Meeting, the SWMA heard comments from Mr. Lou Straub, Fairbanks Scales, and Mr. Gordon Johnson, Gilbarco, indicating that no changes were needed to paragraph G-S.8. The SWMA S&T Committee also received information from the WWMA and the WS regarding work accomplished in the WS to refine criteria in Pub 14 relative to the interpretation of paragraph G-S.8. Ms. Tina Butcher, NIST WMD, and members of the WS, including Mr. Straub and Mr. Truex, reported that the WS had made progress on developing proposed changes to the Scales Checklist in Pub 14, and anticipated forwarding those changes to the NTEP Committee for possible inclusion in the next edition of Pub 14. In anticipation that the Sector's work will bring

closure to this issue, and to encourage consistent interpretation of paragraph G-S.8., the SWMA recommended that this remain an Informational item to allow this work to be completed.

The Committee reviewed the new language proposed by the WS for inclusion in the 2011 Edition of Pub 14. The Committee also agreed with WMD's suggestion that the Committee's interpretation of G-S.8. be restated in Pub 14 for each checklist where G-S.8. is referenced. As noted earlier in the background information, the proposed interpretation is based on language that is already in Pub 14 LMD Section 9.

The Committee initially recommended that this item remain Informational until the NTEP Committee agreed with the recommendation of the WS during the 2011 Interim Meeting. The Committee also agreed with the WMD suggestion that the Committee's interpretation be included in all Publication 14 checklists where paragraph G-S.8. is referenced. The NIST Technical Advisor contacted Mr. Truex, NTEP Administrator and NTEP Committee Technical Advisor, regarding the proceedings of the NTEP Committee in its review of the summary of the 2010 meeting of the NTETC WS during the Interim meeting. Mr. Truex reported that the NTEP Committee recommended no changes to the WS draft summary. Mr. Truex requested that the Committee consider:

1. Adding a statement in the Committee's report recommending the interpretation be placed in other NIST and NCWM documents as appropriate.

2. Rewording the Committee's interpretation of G-S.8. such that it is clear and applies only to electronic components (i.e., it's hard to seal a spring or nose iron).

3. Recommending that other Sectors (Measuring, Belt-Conveyor, and Grain Analyzer) be given the opportunity to review any additions to their respective Pub 14 checklists since the WS was given time to review the proposed Committee interpretation in the weighing sections of Pub 14.

4. The paragraph, in its final form, should probably be an up-front paragraph in Pub 14 "Philosophy for Sealing" appendices.

The Committee agreed with the comments from Mr. Truex. Although the Committee agreed with the comments to withdraw the proposal to amend G-S.8., it was concerned that its interpretation would be overlooked in the future because the item was Withdrawn. Therefore, the Committee agreed to remove the proposed language in its Interim agenda, and they recommended that the Committee's current interpretation of G-S.8. in the Item Under Consideration be a Voting item. The Committee further recommended the language in the "Item Under Consideration" be added to NIST and NCWM documents as appropriate, and that the NTETC Sectors consider adding the language to the applicable "Philosophy for Sealing" appendices in NCWM Pub 14.

During its spring 2011 Annual Meeting, the CWMA supported the item as presented after considering the following comments provided by the SMA:

> SMA understands that this item is a Voting item intended to recognize that the current language in G-S.2. Facilitation of Fraud and G-S.8. Provision for Sealing Electronic Adjustable Components, is sufficient to address the proper sealing methods for electronic devices. SMA understands that this item proposes no changes to HB 44.

At the spring 2011 NEWMA Annual Meeting, Mr. Ross Andersen, Retired Director of the New York Bureau of Weights and Measures, speaking on his own behalf, indicated that there have been other instances in the past where the NCWM membership voted on a Committee's position statement to provide a historical record of a particular Committee position/interpretation. Mr. Andersen also indicated that he believed the Committee's position could be more clearly defined. Shortly after the NEWMA meeting concluded, NIST Technical Advisor, Mr. Rick Harshman, contacted Mr. Andersen in an effort to obtain additional clarification regarding the comment he had made concerning the Committee's position. Mr. Andersen provided the following explanation:

> The Committee's interpretation of G-S.8. being voted on for addition into the Final Report of the 96th NCWM requires a physical seal to be broken before a metrological change can be made to a device. The language that was added to Pub 14 is different than what's proposed for vote. Pub 14 allows a device with

physical means of sealing to be sealed in the calibration or configuration mode if it provides a clear indication that it's in that mode. If NTEP wants to say that an indicator light (which depicts a device is in the calibration or configuration mode) is acceptable, I'd like to see the Committee sanction that in their interpretation. Since NTEP policy must conform with HB 44, it seems necessary to ensure the code also permits the indicator light. Thus, that must be included in the interpretation of the Committee.

After further review of the Weighing Sector (WS) language, WMD agreed with the concern raised by Mr. Andersen. WMD concurred that the WS language was not consistent with the Committee's interpretation of G.S.8. in that adjustments could still be made while a physical seal is intact.

During the open hearings at the 2011 NCWM Annual Meeting, WMD suggested making the following changes to Committee's interpretation of G-S.8. as shown in NCWM Publication 16 in the "Item Under Consideration," to clarify how that interpretation is intended to apply to electronic devices protected by physical means of security versus electronic devices protected by electronic means of security:

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

Mr. Gordon Johnson, Gilbarco, Inc.; Mr. Dmitri Karimov, Liquid Controls, speaking on behalf of MMA; and Mr. Darrell Flocken, Mettler-Toledo, speaking on behalf of the SMA, supported the language in Pub 16. Mr. Johnson and Mr. Karimov requested additional time for review of the language suggested by WMD. Mr. Flocken, speaking on behalf of Mettler-Toledo, indicated support for the amendments as suggested by WMD.

After discussing the comments from the 2011 NCWM Annual Meeting open hearings and the proposed changes from WMD, the Committee agreed to modify the language in its Interim Report to that shown in this Final Report in the Item Under Consideration. The Committee also requested that the WS review the language that was added to NTEP Pub 14 and make certain it is consistent with the Committee's interpretation of G.S.8.

Additional background information and previous language considered by the Committee including written and open hearing comments may be reviewed in the 2008, 2009, and 2010 NCWM Annual Reports.

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

(The status of this item was changed from Informational to Developing.)

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

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

Item Under Consideration: Amend G-S.1. Identification and G-S.1.1. Location of Marking Information for Not-Built-for-Purpose, Software-Based Devices as shown in the 2010 Committee's Final Report. The language in the Final Report incorporated the March 2010 recommendation from the SS and the Committee's suggested language to address SMA concerns with the requirements in G-S.1., where it states that "all equipment . . . shall be permanently marked . . ." and G-S.1.1. that allows alternate methods, other than "permanently marked," to identify software-based devices.

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

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

1. The NTEP CC Number must be continuously displayed or hard-marked;

2. The version must be software-generated and shall not be hard-marked;

3. The version is required for embedded software;

4. Printing the required identification information can be an option;

5. Command or operator action can be considered as an option in lieu of a continuous display of the required information; and

6. Devices with embedded software must display or hard-mark the device make, model, and S.N. to comply with G-S.1. Identification.

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

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

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

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

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

See the 2009 and 2010 Annual Reports to review previous language and positions to amend HB 44 paragraphs G-S.1. and G-S.1.1.

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

The SS recommended amending the 2010 item under consideration by removing the proposed words "**and manufactured after January 1, 201X**" from the first sentence in paragraph G-S.1., and noted that the remainder of the proposal remains unchanged. The SS agreed that the reference to the manufacture date is not necessary since the current proposal to amend G-S.1. includes applicable nonretroactive dates for the amended subparagraphs.

The SS also initiated discussion on two new concepts, which may eventually result in additional recommendations to amend G-S.1. At that time, the SS noted that these new ideas were in the developmental stage and were included in the Committee's report by request of the Sector, since comments from the regions and other interested parties would be appreciated by the Sector.

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

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

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

The SS requested feedback on a proposal to specify a limited number of menu items/icons for accessing the CC number (if it is not hard-marked or continuously displayed) in subparagraph (b) and that the information be accessible through one, or at most, two levels of access.

At its spring 2010 Annual Meeting, NEWMA recommended leaving this item Informational to allow review of the SS's revised language from its March 2010 meeting.

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

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

The Committee amended the item under consideration based on the recommendations of the SS at its March 2010 meeting. The Committee agreed to clarify and document the SMA concerns with the requirements in G-S.1. where it states that "all equipment . . . shall be permanently marked . . ." and G-S.1.1. that allows alternate methods, other

than "permanently marked," to identify software-based devices. Consequently, the Committee revised the first paragraph of G-S.1. to read as shown in the "Item Under Consideration" in its 2011 NCWM Interim Agenda.

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

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

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

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

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

(d) the current software version or revision identifier for ***~~not built for purpose,~~*** *software-based devices; [Nonretroactive as of January 1, 2004]*

(Added 2003)

(1) ***Except for devices with limited character sets (e.g., primary indications without alpha characters or annunciators*)*** *the version or revision identifier shall be prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required version or revision. [Nonretroactive as of January 1, 2007]*
****[Nonretroactive as of January 1, 201X]***

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

(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.)

(Added 2006)
[Nonretroactive as of January 1, 2007]
****[Nonretroactive as of January 1, 201X]***

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

The WWMA believes that its suggested changes to the proposal sufficiently address all issues identified during the open hearings, and this should remain an Informational item to allow the SS an opportunity to comment on the revisions proposed by the NCWM and WWMA S&T Committees.

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

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

At its fall 2010 Interim Meeting, NEWMA stated that the WWMA proposed revision to the "Item Under Consideration," and the questions raised during discussions of the issue have merit. NEWMA recommended this remain an Informational item to give the Weighing Sector and the NCWM S&T Committee time to evaluate the new language.

At the 2011 Interim Meeting, the NCWM S&T Committee heard from Mr. Jim Pettinato, SS Co-Chairman, on two key points.

1. The software version number would be required for all software-based devices (i.e., "built-for-purpose" devices as well as "not-built-for-purpose" devices).

2. Limit the options for nonhard-marked certificate numbers so they are easy to find. There have been reports of difficulty in finding information such as the CC number, particularly for not-built-for-purpose devices.

Mr. Pettinato also noted that the intent of the proposal is not to require stand-alone software to have a serial number.

The Committee agreed that this item is not ready to move forward as a Voting item. The Committee recommends the SS review the following comments and points made during the 2011 Interim meeting and consider how these issues should be addressed.

- Confirm that all software-based devices must have version/revision identification.

- Stand-alone software does not require a serial number.

- Is a definition needed for software-based (electronic) devices?

- Devices with limited character sets may need different requirements since they may not be able to display all characters; they may have limited or no room for full display; and hard-markings for identification information may be impractical.

- Guidance is needed for metrological and non-metrological software. Perhaps separate version numbers or specific character locations in the version number that applies to metrological software are needed.

- Combine G-S.1 and G-S.1.1.

- Should G-S.1.(c) be included in G-S.1.1.(b)?

At their May 2011 Annual Meeting, the CWMA recommended this item remain Informational while waiting recommended changes from the SS. The NEWMA also recommended this item remain Informational until the SS has had the chance to report back to the NCWM S&T.

Prior to the 2011 NCWM Annual Meeting, NIST Technical Advisor Mr. Harshman, contacted SS Co-Chairman, Mr. Jim Pettinato, to obtain an update on the progress of the Sector's continuing development of this item. Mr. Pettinato provided WMD a draft summary of the March 2011 SS Meeting. Based on the information provided and Mr. Pettanato's explanation of the discussions that took place during the meeting, WMD suggested the SS consider recommending to the S&T Committee that the status of this item be changed from Informational to Developing in order to provide the SS additional time to more fully develop the item.

During the 2011 NCWM Annual Meeting, the Committee heard from WMD relative to whether or not the status of this item should be changed to Developing to provide the SS additional time to more fully develop the item based on the following points:

1. The current proposal is not developed enough for consideration by the S&T. Based on the diversity of comments heard on this issue, WMD believes the item is not close to a vote, and considerable work still needs to be done to develop the item before it could be considered for a vote by the NCWM.

2. WMD interprets the current proposal to require software be marked with a non-repetitive serial number; when in fact, it is not the intent of the SS to require such marking. Thus, it is believed that the language in the 2010 Committee's Final Report will need modification to resolve this issue.

3. The draft of the March 2011 SS Summary reported that several SS members envision G-S.1. being developed further to the extent that G-S.1.1. may not be needed.

NIST Technical Advisor, Mr. Harshman, reported that SS Co-chairman, Mr. Pettinato, stated a key point agreed upon by members of the SS was that the software version/revision identifier should be accessible through the user interface. When asked about the possibility of changing the status of the item to Developing, Mr. Pettinato indicated he intended to poll members of the SS to determine whether or not they agree the status should be changed.

During the S&T Committee's open hearings, Mr. Darrell Flocken, representing SMA, indicated that he believes the SS is intending to propose a change to the current item, and looks forward to the further development of this item based on the work of the SS. Mr. Dmitri Karimov, speaking on behalf of the MMA, agreed with the comments made by Mr. Flocken. No member of the SS provided any input during the open hearings.

There were three positions posted on the NCWM 2011 Online Position Forum. Of those three, two indicated neutral positions, and the remaining one, posted by Mr. Gordon Johnson, Gilbarco, Inc. opposed the item and included the following comments:

> Gilbarco does not support the current proposed language. Our pumps and dispensers have a numeric display capable of displaying 6 digits. It is not currently possible to display the version identifier or an abbreviation or symbol that identifies the version number as required in (d) (1) and (2). It is not possible to access the software version using "one or, at most, two levels of access" as noted in section G-S.1.1 (3). We do not currently offer a menu based system and do not offer functions such as "Metrology," "System Identification," or "Help." We do not have the ability to offer icons or symbols. Meeting the new marking requirements will be costly to the customer. We can currently display the software version number (i.e., Software Version number 01.8.30 would be shown on the main display as 01830 by using controls on the device). The software version will also be displayed during the power-up cycle. Recommend the status be changed to Informational.

The Committee discussed the comments offered by WMD, SMA, and others. After considering those comments, the Committee agreed to change the status of this item to Developing because the item lacks enough information for full consideration, and a full proposal has yet to be developed.

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

(This item was adopted.)

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

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

Item Under Consideration:

1. Amend General Code paragraph G-A.6. Nonretroactive Requirements by amending subparagraphs (b) and (c), and adding a new subparagraph (d) as follows:

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

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

   (b) **devices (**both new and used**)** brought into a state after the effective date; ~~**and**~~

   (c) devices used in noncommercial applications which are placed into commercial use after the effective date~~.~~**; and**

   (d) devices undergoing type evaluation, including devices that have been modified to the extent that a new NTEP CC is required.

   Nonretroactive requirements are not enforceable with respect to devices that are in commercial service in the state as of the effective date or to new equipment in the stock of a manufacturer or a dealer in the state as of the effective date.
   [*Nonretroactive requirements are printed in italic type.]*
   (Amended 1989 **and 2011**)

2. Amend General Code paragraph G-S.1.2. Remanufactured Devices and Remanufactured Main Elements by changing its status from nonretroactive to retroactive, adding an enforcement date, and changing the print from italics type to upright roman type as follows:

   G-S.1.2. Remanufactured Devices and Remanufactured Main Elements. – ~~**All remanufactured devices and remanufactured main elements**~~ **All devices and main elements remanufactured as of January 1, 2002**, shall be clearly and permanently marked for the purposes of identification with the following information:

   (a) the name, initials, or trademark of the last remanufacturer or distributor;

   (b) the remanufacturer's or distributor's model designation, if different than the original model designation.

   (Added 2001) **(Amended 2011)**

   Note: Definitions for "manufactured device," "repaired device," and "repaired element" are also included (along with definitions for "remanufactured device" and "remanufactured element") in Appendix D, Definitions.

Background/Discussion: This item was originally submitted by WMD in 2010, in response to an inquiry received from a state Weights and Measures Director regarding whether or not a nonretroactive paragraph in the LMD Code of HB 44 would apply to a remanufactured device. In researching this inquiry, WMD discovered an unintended gap in two General Code requirements relative to remanufactured equipment as follows:

- Paragraph G-S.1.2. Remanufactured Devices and Remanufactured Main Elements was designated a nonretroactive requirement for marking remanufactured devices and remanufactured main elements with the identification information of the remanufacturer and is enforceable as of January 1, 2002. WMD believed that this paragraph is intended to apply to remanufactured devices and remanufactured main elements that have been placed into commercial service as of the effective date of the requirement (i.e., January 1, 2002).

- Paragraph G-A.6. Nonretroactive Requirements provides the various conditions in which nonretroactive requirements apply. The paragraph references manufactured devices, new devices, and used devices, but did not include any reference to "remanufactured devices" or "remanufactured main elements."

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

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

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

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

At the 2010 NCWM Annual Meeting, the Committee received several comments from remanufacturers requesting the item be made an Informational item to give the device remanufacturers additional time to evaluate the impact of the proposed amendment to G-A.6. See the 2010 Final Report of the S&T Committee for additional background information and to view the comments and positions taken on this issue by the various stakeholders during the 2010 NCWM Annual Meeting.

During the 2010 NCWM Annual Meeting, WMD provided the Committee with "real life" examples outlining when a device is considered as "repaired" or "remanufactured." The examples included both weighing and measuring devices and clarified when devices were to be considered "repaired" or "remanufactured." (**Note:** These examples along with HB 44 (2010) General and Scales Code List of Nonretroactive Requirements can be reviewed in Appendix B of this report.)

During its deliberations at the 2010 NCWM Annual Meeting, the Committee considered the following points:

- The marking requirement in paragraph G-S.1.2. was adopted as a "*nonretroactive requirement*" so that devices and elements remanufactured prior to January 1, 2002, would not have to be retroactively marked.

  - By formatting the language in paragraph G-S.1.2. in *italics* font, and designating it as a *"nonretroactive requirement"* directed specifically to remanufactured devices and elements, it could be argued that remanufactured devices and elements are subject to *"nonretroactive requirements."*

  - Alternatively, if one argues that remanufactured devices and elements are **not** subject to "*nonretroactive requirements*," then the "*nonretroactive markings*" specified in G-S.1.2. would never

be applied to any remanufactured device – even though the language is specifically directed to these devices.

- Paragraph G-A.6. is currently silent with respect to remanufactured devices and elements and without further clarification is subject to multiple interpretations.

- There is a lot of misunderstanding of the original findings and recommendations of the original task force.

- The report of the Remanufactured Task Force and table of scenarios is not readily available outside of the 2001 NCWM Final Report.

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

At its fall 2010 Interim Meeting, the CWMA received comments during its open hearing to adopt the proposal as written, and move it forward for a Vote. Members of the CWMA believe that remanufactured devices also need to be traceable to an NTEP CC. The CWMA also received comments concerning unfair competition between original manufacturers and remanufacturers due to the use of non-OEM replacement parts. The CWMA S&T Committee recommends that this item be moved as a Voting item for the reasons stated above. All new and remanufactured device types to be used in trade or commerce must be traceable to an NTEP CC.

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

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

The WWMA agreed that while the "Examples of Repaired Devices/Repaired Elements" were sufficiently developed, they need to be readily available to remanufacturers and field officials. The WWMA also agreed that the item should continue as an Informational item, allowing other regions and industry to provide input.

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

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

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

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

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

At the S&T Committee's 2011 NCWM Interim Meeting open hearings, Mr. Darrell Flocken, Mettler Toledo, speaking on behalf of the SMA, indicated that the SMA takes no position on the issue at this time. Mr. Tom McGee, PMP Corporation, restated his opposition to the item and requested it be Withdrawn. He commented that current language in G-A.6. Nonretroactive Requirements already applies to remanufactured equipment by virtue of the term "used." He also questioned the practicality of applying nonretroactive requirements to equipment that had been remanufactured and provided some examples to support his position. Mr. Tim Columbus of Steptoe and Johnson, LLP, specified that he and his clients have difficulty differentiating between the terms "remanufactured" and "used." He indicated that the guidelines developed by the NCWM Remanufactured Devices Task Force help somewhat, but with respect to retail motor fuel devices, the definitions of these terms are not clear. Mr. Doug Long, RDM Industrial Electronics, a remanufacturer of electronic boards for RMFDs, indicated his opposition to the item by stating that he saw no long-term benefits from requiring remanufactured devices to comply with nonretroactive requirements.

Mr. Ross Andersen, Retired Director of the New York Bureau of Weights and Measures, cautioned members to be careful concerning changing G-A.6., and emphasized the significance of changing an "Application" paragraph in the General Code. He questioned the difference between equipment that had been remanufactured versus repaired, and identified and noted that it may be confusing when a label is applied by a service agent. Mr. Andersen added that if a device has been repaired so that it is no longer traceable to the original CC and a new CC is required, then that equipment should be treated as a new device with respect to the application of nonretroactive requirements. Because such equipment would be treated as new, he did not see a need to change G-A.6.

[**NIST Technical Advisor's Note:** *Relative to Mr. Andersen's comments concerning the confusion created when a label is applied by a service agent, many state service agents regulations require that the service agent identify his or her work by an adhesive tag or label that includes much of the same information required by G-S.1.2. Other service agents, agencies, and installers label a device in order for the user to contact them in the event that additional sales or services are required.*]

NIST WMD suggested adding additional clarification in HB 44 to make clear the intent of G-A.6. as it relates to remanufactured equipment, offered three options for consideration, and provided a description of the effect that each option would have relative to its selection. WMD also suggested changing the requirement status of G-S.1.2. from nonretroactive to retroactive (by changing the type from italics to upright roman), and specifying the date in which the requirement is to be effective. WMD noted that G-S.1.2. pertains only to remanufactured devices and remanufactured main elements. G-A.6. specifies the conditions in which nonretroactive requirements apply to both new and used devices, but is silent with respect to remanufactured devices and remanufactured main elements. Thus, there is an unintended gap in the two paragraphs. As a result, WMD indicated a concern that the enforcement of the marking requirements in G-S.1.2. may be difficult to support. However, if the paragraph status of G-S.1.2. were changed from nonretroactive to retroactive and an effective date specified, the paragraph, in accordance with G-A.5. Retroactive Requirements would be enforceable with respect to all equipment, including remanufactured equipment, as of whatever date is specified.

Members of the Committee concluded that nonretroactive requirements should not necessarily apply to all devices that have been repaired/remanufactured, to the extent that the guidelines established by the NCWM Remanufactured Devices Task Force provide an indication that the device has been remanufactured. However, members agreed that nonretroactive requirements should apply to any device that has been modified, to the extent that a new NTEP CC is required. Thus, if a remanufactured device is issued a new CC, that device would be required to comply with all applicable nonretroactive requirements in effect as of the date the device is placed into service just as any new device would.

The Committee also agreed with WMD's assertion that there existed an unintended gap between G-A.6. and G-S.1.2. that could make enforcement of G-S.1.2. difficult to support. The Committee agreed that changing the status of G-S.1.2. from nonretroactive to retroactive and assigning an enforcement date of January 1, 2002, would be an easy and effective way to eliminate the gap without causing any undue hardship to device owners, equipment suppliers, equipment manufacturers, or any other interested party.

The Committee agreed to amend paragraphs G-A.6. and G-S.1.2. as shown in the Item Under Consideration and to move the item forward as a Voting item.

At their May 2011 Annual Meetings, the CWMA and NEWMA both recommended adoption of this item.

During the 2011 NEWMA Annual Meeting, Mr. Andersen, speaking on his own behalf, commented that the requirement will have a more significant impact on load cell manufacturers than on fuel pump manufacturers. When asked later by NIST Technical Advisor, Mr. Harshman, why he had made such a comment, Mr. Andersen explained that it was due to a difference in the definitions of "repair" and "remanufacture" and NTEP's policy as it relates to load cells. He also stated he felt the added language (proposed) in bullet (d) was redundant because if a device is remanufactured to the extent that a new CC is required, he considered it a new device. [**NIST Technical Advisor's Note:** *This statement is supported in NTEP Administrative Policy "M" and HB 130, Section 4 of the Uniform Regulation for National Type Evaluation.*] To further explain his point of view, Mr. Andersen stated that gas pumps are rarely remanufactured, while almost any work done on a load cell must be considered a remanufacture rather than a repair. This is because changes to the load cell affect influence factors that require a new certificate, and thus, should be considered a new device. Mr. Tom McGee of PMP Corp. stated he supports the item given the new language being proposed, but he questioned whether G-S.1.2. should be effective as of the date the item is passed as it may (unintentionally) have an unfavorable impact on devices that have been placed into service as of 2002. Mr. Harshman, NIST Technical Advisor, explained that the change proposed to G-S.1.2. does not in any way change the application of the requirement or the date that it becomes effective since the paragraph is currently nonretroactive as of January 1, 2002.

During the open hearings of the 2011 NCWM Annual Meeting, Mr. McGee, PMP Corporation and Mr. Gordon Johnson, Gilbarco, Inc., stated that they supported this item. Mr. Flocken, Mettler-Toledo, speaking on behalf of the SMA took no position on this item.

There were six positions posted on the NCWM 2011 Online Position Forum. Of those six, four supported the proposal and two were neutral to the proposal.

The Committee, during its deliberations, agreed with Mr. Andersen's earlier comments that subparagraph (d) is somewhat redundant; however, because of the past lack of consistency in the application of G-A.6 to remanufactured equipment, the Committee believed that the added language was necessary. Consequently, the Committee agreed to include subparagraph (d) and present the item for Vote.

Additional background information can be reviewed in the S&T Committee's 2010 Annual Report.

320 SCALES

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

Source: 2010 NTETC Weighing Sector

Purpose: To reduce the inconsistency between full load time dependence (creep) requirements in T.N.4.5.1. and return to zero requirements in T.N.4.3. Zero Return: Non-automatic Weighing Instruments (creep recovery).

Item Under Consideration:

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

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

(1) 0.5 e for Class II and IIII devices;

(2) 0.5 e for Class III devices with 4000 or fewer divisions; and

(3) 0.83 e for Class III devices with more than 4000 divisions.

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

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

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

(Added 2005) (Amended 2006**,** ~~**and**~~**2010, and 201X**)

Background/Discussion: During the 2010 A nnual Meeting, the NCWM voted to amend the language in T.N.4.5.3. Zero Load Return: Non-Automatic Weighing Instruments. Hobart Corporation reported that the changes to scale tolerances for time dependence in HB 44 adopted in 2005 were still not consistent with the intent to harmonize load cell and scale performance requirements. In 2009, the WS addressed creep recovery on return to zero, but there is still an extremely tight 0.5e requirement (Scales Code paragraph T.N.4.5.1.(a)) for the change in indications in 30 minutes. This requirement makes the recent changes to the scale zero return (creep recovery) specification of minimal value since the amount of creep at capacity is related to a load cells' ability to return to zero. The WS agreed with the intent of the proposal submitted by Hobart Corporation, and agreed to submit the above proposal to amend HB 44 Scales Code paragraph T.N.4.5.1.(a) to the NCWM S&T Committee and regional weights and measures associations.

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

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

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

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

[**NIST Technical Advisor's Note:** *Prior to the NCWM 2011 Interim meeting, the NIST Technical Advisor asked the WS Chairman, Mr. Flocken, Mettler-Toledo, whether the change to this paragraph was intended to not only apply to Class III scales with d > 4000, but also, all class II and III multi-interval and multiple range scales as proposed changes to the paragraph indicate. No conclusive answer to this question was provided prior to the Interim meeting.*]

During the 2011 NCWM Interim meeting open hearings, Mr. Flocken speaking on behalf of the SMA supported this item. However, later, during S&T Committee deliberations, Mr. Flocken stated that after researching the item further, including a discussion he had with another scale manufacturer, it was concluded that the proposal is not needed since the ultimate determination of compliance is the four-hour test (specified in subparagraph (b) of T.N.4.5.1.) regardless of the 0.5 or 0.83 e determinations. Upon receiving this new information, the S&T Committee decided this item should be Withdrawn.

At their May 2011 Annual Meetings, the CWMA and NEWMA supported the Committee's recommendation that this item be Withdrawn from the NCWM Agenda. At the NEWMA meeting, Mr. Straub speaking on behalf of the SMA, also supported the Committee's recommendation to Withdraw this item.

No further action was taken by the Committee at the 2011 NCWM Annual Meeting.

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

(This item was adopted.)

Source: 2010 NTETC Weighing Sector

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

Item Under Consideration:

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

(a) 0.5 times the value of the load cell verification interval (0.5 v) for Class II and IIII load cells;

(b) 0.5 times the value of the load cell verification interval (0.5 v) for Class III load cells with 4000 or fewer divisions;

(c) 0.83 times the value of the load cell verification interval (0.83 v) for Class III load cells with more than 4000 divisions; or

(d) **2.5** ~~1.5~~ times the value of the load cell verification interval (**2.5** ~~1.5~~ v) for Class III L load cells.

(Added 2006) (Amended 2009 **and 2011)**

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

Prior to 2009, the tolerance for Class III load cells was 0.5v. This was increased by a factor of 5/3 to arrive at the 0.83 v tolerance in the current requirement. This recommendation proposes to increase the existing 1.5v tolerance for Class III L load cells by the same 5/3 factor. Thus the new tolerance would be 1.5v x 5/3 or 2.5v.

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

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

The HB 44 Class III creep recovery tolerance is 0.83v (0.83v x 10 lb/v = 8.3 lb)
The HB 44 Class III L creep recovery tolerance is 1.5v (1.5v x 5 lb/v = 7.5 lb)
The proposed HB 44 Class III L creep recovery tolerance is 1.5v x 5/3 = 2.5v (2.5v x 5 lb/v = 12.5 lb)

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

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

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

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

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

At the 2011 NCWM Interim Meeting, the Committee received comments from Mr. Flocken speaking on behalf of the SMA, who indicated support for the item as written. Mr. Flocken stated that the item addressed an omission that was made back in 2009 when the tolerance value was modified for Class III load cells, but overlooked for Class III L load cells. The Committee agreed and recommended this item be moved forward as a Voting item.

The CWMA and NEWMA both supported this item and recommended adoption by the NCWM during their spring 2011 Annual Meetings.

There were six positions posted (three from industry and three from government) on the NCWM 2011 Online Position Forum, all of which supported this item without additional comments.

During the S&T open hearings of the 2011 NCWM Annual Meeting, Darrell Flocken speaking on behalf of the SMA supported this item. There were no comments received in opposition.

The Committee believed there was sufficient support for this item without need for any change and agreed to present the item for Vote.

321 BELT-CONVEYOR SCALE (BCS) SYSTEMS

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

(This item was adopted.)

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

Purpose: The U.S. National Work Group (USNWG) on Belt-Conveyor Scale Systems (BCS) agreed that the existing language in N.3.1.3. resulted in an excessive allowance for the variation in the totalizers for a belt with larger minimum division sizes. Conversely, the three division requirement potentially imposed an excessively narrow restriction for BCS with smaller minimum divisions. The proposed amendment corrects the issue and makes the allowable variation independent of division size.

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

N.3.1.3. Check for Consistency of the Conveyor Belt Along Its Entire Length. – ~~**After a zero-load test with flow rate filtering disabled, the totalizer shall not change more than plus or minus 3.0 scale divisions (± 3 d) from its initial indication during one complete belt revolution.**~~ **During a zero-load test with all operational low-flow lock-out disabled, the absolute value of the difference between the maximum and minimum totalizer readings indicated on the totalizer during any complete revolution of the belt shall not exceed 0.12% of the minimum test load.**

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

(Added 2002) (Amended 2004 **and 2011**)

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

at 0.5, 1.5, 2.5, etc., revolutions. However, material tests are rarely conducted using complete revolutions of the belt.

During the 2009 NCWM Annual Meeting, the Committee agreed with comments from Mr. Bill Ripka, Thermo Ramsey, Chairman of the USNWG on BCS, and WMD, that the item was not ready for vote and will remain Informational on its agenda as recommended by the USNWG.

At the 2010 NCWM Annual Meeting, Mr. Ripka, Thermo-Fisher Scientific, provided the Committee with a letter regarding the status of the USNWG on BCS work on this issue. Based on the progress of a USNWG Subcommittee tasked with working on this issue and the pending receipt of actual field information as it relates to belt consistency, the Subcommittee requested the National S&T Committee to consider moving the Belt Consistency proposal from Informational to Developing. A complete copy of the letter can be viewed in Appendix C of this report. The Committee agreed with the recommendation to give this item Developmental status and move it to the list on Developmental items on the Committee's 2011 Interim Agenda.

During the 2010 WWMA Annual Technical Conference open hearings, Mr. Ripka speaking on be half of the Subcommittee of the USNWG on BCS, recommended this proposal be moved forward as a Voting item. He stated that a small survey had been conducted at thirteen BCS installations to verify whether these installations would fit within the new wording. He reported that twelve of the thirteen installations easily complied with the proposed requirements; the remaining scale was a non-commercial device. Mr. Ripka, speaking on be half of Thermo Scientific, suggested deleting the last sentence of the proposal because the end value of the zero-load test is already covered in paragraph N.3.1.2. Test of Zero Stability. Mr. Cook, NIST Technical Advisor, reported that the recommendations of the subgroup were submitted to the entire USNWG on BCS with a recommendation that the item be upgraded to the NCWM S&T Committee agenda as a Voting item.

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

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

[**NIST Technical Advisor's Note:** *Just prior to the 2011 NCWM Interim Meeting, Ian Burrell, a member of the USNWG on BCS Subcommittee submitted a request to the NIST Technical Advisor to the USNWG on BCS to amend the language in Item Under Consideration specified in agenda Item 321-1 of the 2011 Interim agenda. The request was forwarded to other members of the subgroup to solicit their input relative to the changes proposed. Only one response (in acceptance of the changes) was received from the subgroup prior to the Interim meeting and at no time was the new language discussed or considered during the 2011 Interim Meeting Committee deliberations. The NIST Technical Advisor sought additional input concerning the proposed language change from members of the entire USNWG on BCS when that group met in February 2011, but no comments were received in support or opposition when the issue was raised. Thus, no action was taken at that time to amend the language as requested by Mr. Burrell.*]

During the 2011 NCWM Interim Meeting, Mr. Darrell Flocken, Mettler-Toledo, speaking on behalf of the SMA supported the item. Mr. Ripka speaking on behalf of the USNWG Subcommittee indicated that the item was sufficiently developed, and recommended that the proposal to amend N.3.1.3. be moved forward as a Voting item. The Committee agreed and recommended that the item as specified in Item Under Consideration be moved forward as a Voting item.

The CWMA and the NEWMA both supported the item and recommended adoption by the NCWM at their spring 2011 Annual Meetings. Mr. Lou Straub, Fairbanks Scales, speaking on behalf of the SMA at the 2011 NEWMA Annual Meeting, also supported this item.

Just prior to the 2011 NCWM Annual Meeting, WMD compared the language that had been previously submitted by Mr. Burrell to that which was being proposed. WMD concluded that the language submitted by Mr. Burrell was technically more accurate and less ambiguous, because it correctly associated the term "absolute value" with a change in totalizer readings. WMD noted that the language submitted by Mr. Burrell correctly stated the intent of the requirement. Thus, WMD agreed that the proposed language should be changed as requested by Ian Burrell. The NIST Technical Advisor to the USNWG on BCS, contacted Mr. Ripka, USNWG Chairman, to make him aware of the results of WMD's analysis relative to this item, and he too agreed that the proposed language should be changed.

During the 2011 NCWM Annual Meeting S&T Committee open hearings, NIST Technical Advisor, Mr. Steve Cook, speaking on behalf of WMD, supported the language that had been submitted by Mr. Burrell since it better reflects the intent of the USNWG. Mr. Ripka, speaking on behalf of Thermo-Fisher Scientific and as Chairman of the USNWG on BCS, supported the change and stated that the change removed ambiguity. Mr. Ripka also submitted a letter to the S&T Committee in support of the new language (refer to Appendix C), which indicated that the new language had been distributed to members of the USNWG, and all who had responded were in favor of the change.

The Committee agreed with the above comments that the revised language was technically more accurate and less ambiguous than that which had been proposed earlier. The Committee also agreed that the term "absolute value" was, as WMD had concluded, intended to be associated with the change in totalizer readings rather than the minimum totalized load. Consequently, the Committee decided that the change to the language as shown above in the Item Under Consideration was appropriate and maintained the status of the item as Voting.

(See the Committee's 2008, 2009, and 2010 Annual Reports for additional background information.)

331 VEHICLE-TANK METERS (VTM)

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

(This item was adopted.)

Source: 2011 NCWM S&T Committee, CWMA, WWMA, SWMA, and NEWMA

Purpose: To provide a means for inspectors and service personnel to determine the temperature of the product at the meter, enabling them to reduce uncertainties in the testing process by applying paragraph N.5. Temperature Correction for Refined Petroleum Products.

Item Under Consideration: Add a new paragraph to S.2. Design of Measuring Elements in Section 3.31 Vehicle-Tank Meters to read as follows:

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

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

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

[Nonretroactive as of January 1, 2012]

(Added 2011)

Background/Discussion: During discussions of proposed changes (which were adopted in July 2010) to reduce the tolerances for VTMs equipped with automatic temperature compensating systems in paragraph T.2.1., meter manufacturers expressed concerns about how to ensure that consistent and appropriate test procedures and equipment be used by weights and measures officials during inspections of VTMs. In response to these concerns, WMD revised the EPOs for VTMs and presented this information during a training seminar in April 2010. In the

process of revising and presenting the procedures, WMD received comments indicating that many VTMs are not equipped with means for determining the temperature of the product at the meter. As a result, the inspector is unable to correct for any differences due to temperature between the meter and the prover during testing and, thus, is unable to properly apply Test Note paragraph N.5. Temperature Correction for Refined Petroleum Products, which states:

> **N.5. Temperature Correction for Refined Petroleum Products.** – Corrections shall be made for any changes in volume resulting from the differences in liquid temperatures between the time of passage through the meter and the time of volumetric determination in the prover. When adjustments are necessary, appropriate petroleum measurement tables should be used.
>
> (Added 2007)

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

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

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

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

1 degree difference x 0.00069/ °F x 100 gal = 0.069 gal = 15.9 in^3 for gasoline
1 degree difference x 0.00050/ °F x 100 gal = 0.05 gal = 11.6 in^3 for diesel

If acceptance tolerance applies, the tolerance on a 100 gal draft of a VTM meter would be 0.15 % of the indicated 100 gal delivery, which is 0.15 gal or 35 in^3. This means that almost half of the allowable tolerance is taken up by the effects of a one degree temperature difference on gasoline and about a third of the tolerance on diesel.

The LMD Code (Section 3.30.) already includes a paragraph (S.2.6. Temperature Determination – Wholesale Devices) requiring means for taking the temperature of the product at the meter for larger, wholesale meters and the Liquefied Petroleum Gas and Anhydrous Ammonia LMD Code (Section 3.32., paragraph S.2.5. Thermometer Well) requires this provision for all LPG & NH_3 meters. This proposed change to the VTM Code would also promote alignment of these liquid-measuring device codes.

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

This new language will encourage the use of corrections for temperature differences between the meter and the prover during the testing process because a thermometer well will enable inspectors and service personnel to

determine the temperature of the product at the meter. As a result, this will promote more consistent calibration and verification of meter accuracy and improve uniformity in measurements from company to company.

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

At its 2010 WWMA Annual Technical Conference, the WWMA received comments on this item during its open hearings, suggesting that this was another attempt at temperature compensation. The WWMA S&T Committee disregarded those comments in their deliberation because the proposal is not an automatic temperature compensation issue. The Committee voted to recommend that this item move forward as a Voting item on the NCWM S&T Committee Agenda.

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

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

The NTETC Measuring Sector reviewed this issue at its October 2010 meeting. While the Sector had no specific technical guidance to offer on this issue, some Sector members suggested that the Committee consider requiring "wet-down" runs on each meter test as an alternative to requiring a thermometer well to help equalize the product temperature between the prover and the meter.

At the Committee's 2011 NCWM Interim Meeting open hearings, Mr. Dmitri Karimov, Liquid Controls, speaking on behalf of the Meter Manufacturers Association (MMA), noted the that MMA believes that the facility for taking the temperature of the product at the meter will improve accuracy during field testing. Accordingly, the MMA supports the addition of the proposed paragraph.

At the Interim Meeting during discussion on the comments received regarding this issue, the Committee considered the idea of requiring additional drafts (to equalize the product temperature between the meter and the prover) prior to the official accuracy test; however, the Committee believes that there is limited value to conducting additional runs, noting that this will increase testing time. The Committee also noted there may be other reasons for differences in temperature between the meter and prover, and additional runs may not entirely eliminate the difference. Given the potential impact of even a one degree Fahrenheit difference, the Committee believes the most appropriate way to reduce the uncertainties contributed by the temperature difference is to provide a means for the inspector/serviceperson to determine the temperature during testing.

The Committee also discussed whether or not more specific requirements for the thermometer well, such as material and thickness, should be specified, noting Canada's experiences that led not only to the specification of criteria for the thermometer wells, but also resulted in criteria that address other components installed near the wells that can also influence accurate temperature determination. The Committee recognizes the value of such specifications and is open to considering a proposal to include specifications at some future point. However, given the immediacy of the need to enable inspectors and service personnel to reduce uncertainties in the testing process, the Committee believes that the current proposal should strive to first align the VTM code requirements for thermometer wells with those in other metering codes. Any recommendation for the inclusion of more specific requirements for the thermometer well itself, should be considered in a separate proposal and, for consistency, should encompass all metering codes (particularly the LPG & Anhydrous Ammonia Liquid-Measuring Devices Code since the effects of temperature on LPG are significantly greater).

Acknowledging the importance of providing tools to enable the inspector and serviceperson to reduce uncertainties in the test process, hearing no opposition at its open hearings, and recognizing the potential impact of temperature on the test results, the Committee agreed to recommend this proposal for a Vote.

At their spring 2011 meetings, both NEWMA and the CWMA expressed support for the proposal as written. The CWMA further noted that the proposed change will align the VTM code with the Liquid-Measuring Devices and LPG and Anhydrous Ammonia Liquid-Measuring Devices Codes. The Committee also received two comments from regulatory officials in support of the proposal through the NCWM Online Comment Forum.

During open hearings at the 2011 NCWM Annual Meeting, the Committee announced that the proposed paragraph was intended to include an effective date of January 1, 2012, noting that the year was not specified in the published copy of the Committee's Interim Report. The Committee heard support by the MMA for the proposal, including the 2012 effective date. NIST WMD reiterated that the proposed language will provide the regulatory authority with the means to reduce uncertainties in the testing process associated with differences in temperature between the meter and the prover. The Committee heard no opposition to the proposed change.

331-2 I T.4. Product Depletion Test

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

Purpose: Modify the VTM code to base the product depletion test tolerances on the meter's maximum flow rate (a required marking on all meters), rather than the meter size (a required marking for meters manufactured beginning in 2009). This will enable more consistent application of the tolerances for older meters, which are not required to be marked with the meter size, and address an unintentional gap which allows an unreasonably large tolerance for smaller meters.

Item Under Consideration: The Committee is considering two options for modifications to paragraph T.4. and Table T.4. The Committee is asking for feedback on both of these proposals and is particularly interested in data from manufacturers and weights and measures jurisdictions that would illustrate the impact of these proposals on smaller meters.

Option 1:

Modify Paragraph T.4. as follows:

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

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

Delete current Table T.4.:

~~Table T.4.~~ ~~Tolerances for Vehicle-Tank Meters on Product Depletion Tests, Except Milk Meters~~	
~~Meter Size~~	~~Maintenance and Acceptance Tolerances~~
~~Up to, but not including, 50 mm (2 in)~~	~~1.70 L (104 in^3)[1]~~
~~From 50 mm (2 in) up to, but not including, 75 mm (3 in)~~	~~2.25 L (137 in^3)[1]~~
~~75 mm (3 in) or larger~~	~~3.75 L (229 in^3)[1]~~
~~[1] Based on a test volume of at least the amount specified in N.3. Test Drafts.~~	

Replace current Table T.4. with revised Table T.4. as follows:

Option 1

Table T.4. **Tolerances for Typical Vehicle-Tank Meters on Product Depletion Tests, Except Milk Meters**			
Meters Marked with Flow Rates in SI Units		**Meters Marked with Flow Rates in Inch-Pound Units**	
Marked Maximum Flow Rate[1]	**Maintenance and Acceptance Tolerances[2]**	**Marked Maximum Flow Rate[1]**	**Maintenance and Acceptance Tolerances[2]**
114 Lpm	**0.57 L**	**30 gpm**	**0.15 gal (34.6 in^3)**
227 Lpm	**1.14 L**	**60 gpm**	**0.30 gal (69.3 in^3)**
380 Lpm	**1.90 L**	**100 gpm**	**0.5 gal (115 in^3)**
757 Lpm	**3.78 L**	**200 gpm**	**1.0 gal (231 in^3)**
[1]Refer to T.4. for meters with maximum flow rates not listed. **[2]Based on a test draft volume of at least the amount specified in N.3. Test Drafts.**			

Option 2:

This option includes larger tolerances for smaller meters.

T.4. Product Depletion Test. – The difference between the test result for any normal test and the product depletion test shall not exceed **one-half (0.5 %) percent of the volume delivered in one minute at the maximum flow rate marked on the meter for meters rated higher than 380 Lpm (100 gpm), or six-tenths (0.6 %) percent of the volume delivered in one minute at the maximum flow rate marked on the meter for meters rated 380 Lpm (100 gpm) or lower. Product depletion test tolerances for typical meters are** ~~the tolerance~~ shown in Table T.4. Test drafts shall be of the same size and run at approximately the same flow rate.

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

Delete current Table T.4.:

~~Table T.4.~~ ~~Tolerances for Vehicle-Tank Meters on Product Depletion Tests, Except Milk Meters~~	
~~Meter Size~~	~~Maintenance and Acceptance Tolerances~~
~~Up to, but not including, 50 mm (2 in)~~	~~1.70 L (104 in^3)[1]~~
~~From 50 mm (2 in) up to, but not including, 75 mm (3 in)~~	~~2.25 L (137 in^3)[1]~~
~~75 mm (3 in) or larger~~	~~3.75 L (229 in^3)[1]~~
~~[1] Based on a test volume of at least the amount specified in N.3. Test Drafts.~~	

Replace current Table T.4. with revised Table T.4. as follows:

Option 2

Table T.4. **Tolerances for Typical Vehicle-Tank Meters on Product Depletion Tests, Except Milk Meters**			
Meters Marked with Flow Rates in SI Units		**Meters Marked with Flow Rates in Inch-Pound Units**	
Marked Maximum Flow Rate[1]	**Maintenance and Acceptance Tolerances[2]**	**Marked Maximum Flow Rate[1]**	**Maintenance and Acceptance Tolerances[2]**
114 Lpm	**0.68 L**	**30 gpm**	**0.18 gal (41.6 in3)**
227 Lpm	**1.36 L**	**60 gpm**	**0.36 gal (83.2 in3)**
380 Lpm	**2.28 L**	**100 gpm**	**0.6 gal (139 in3)**
757 Lpm	**3.78 L**	**200 gpm**	**1.0 gal (231 in3)**
[1]Refer to T.4. for meters with maximum flow rates not listed. **[2]Based on a test draft volume of at least the amount specified in N.3. Test Drafts**.			

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

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

> field (i.e., 1¼-, 1½-, 2- and 3-inch meters with maximum flow rates of 30, 60, 100 and 200 gpm, respectively).
>
> There may be concern that users will move to larger meter sizes to take advantage of the larger tolerances. It is not thought that this will happen, since these systems cannot deliver much over 100 gpm without damaging storage tanks. In fact, most systems we have seen delivering heating oil are actually delivering at less than 80 gpm. If they move to a 200 gpm, 3 in meter, rated at 40 gpm to 200 gpm, they will then have to meet acceptance tolerances all the way down to 60 gpm, which it is not believed that to be achievable on a consistent basis. We believe the typical 2 in system will remain the mainstay of the industry.
>
> Graphs of the relationship of typical meter ratings to pipe cross section area show that positive displacement flow rates are clearly a function of pipe size. Any tolerance that does not reflect that relationship is fundamentally flawed in our view. For comparison, we have included a graphic comparison of the proposed tolerances.

The submitter also noted the following:

> We recognize that the tolerances proposed will reduce the tolerances for meter sizes 2 in and under. We could support some compromise to recognize diminishing returns on smaller meters, thus, allowing a slightly larger tolerance (e.g., 0.6 %) at or below 100 gpm rated flow rate. At 0.6 % for a 2 in (100 gpm) meter, the tolerance would be 139 in^3, virtually identical to the existing tolerance.

The submitter provided supporting graphics, which can be viewed in the Committee's 2010 Final Report in the Developmental Items Section.

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

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

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

At its 2010 Annual Technical Conference, the WWMA recommended that this item move forward as a Voting item. The WWMA believes the proposed amendments to Table T.4. would reduce the unnecessarily large tolerances for meters under 60 gpm (2in meters) and more closely reflects existing tolerances of larger meters. The WWMA also recommended removing paragraph S.5.7. Meter Size from the VTM Code since the language was adopted in 2009 to facilitate a different application of the correct product depletion test tolerances, which were based on meter size. Since the item under consideration proposes to no longer use meter size as the basis for calculating product depletion tolerances, the WWMA believes that paragraph S.5.7. would no longer be necessary. During the voting session, Mr. Kurt Floren, Los Angeles County, California, commented he had no issue with the intent of the proposal, but asked that the NCWM Committee look into the mathematical agreement in the metric conversion listed in Table T.4. It was also suggested that it may be more appropriate to list the "inch-pound" (gpm) before the SI units in Table T.4.

At its 2010 Annual Meeting, the SWMA S&T Committee stated that it does not object to considering modifications to the tolerance to better address the product depletion test. However, it feels that additional time is needed for industry and weights and measures officials to study the proposed changes. The SWMA S&T Committee noted that

the product depletion tolerance was amended only five years ago, and a new marking requirement was added to correspond to that requirement a few years later in 2009. The SWMA S&T Committee feels that, before making yet another change, thoughtful consideration needs to be given to ensure that any changes are appropriate. The SWMA agreed with the SWMA's S&T Committee's justification and its recommendation that this item be made an Informational item on the 2011 NCWM Committee agenda.

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

At its open hearings at the 2011 NCWM Interim Meeting, the Committee heard comments from the MMA expressing concerns about both options presented in the proposal. Mr. Dmitri Karimov, Liquid Controls, speaking on behalf of the MMA, noted that 2 in meters tested against the tolerances proposed in the first option ("Option 1") would automatically fail. Under the second option ("Option 2"), 2 in meters would meet the requirements, but smaller meters such as 1¼ in meters would fail. The MMA believes that this item requires additional work and recommended that the item be designated as an Informational item.

Ms. Juana Williams, NIST Weights and Measures Division, offered the following comments for the Committee to consider in its technical analysis of this item:

- WMD observed that the breakpoints of the tolerance are depicted incorrectly relative to the meter sizes on the graphs (comparing current and proposed tolerances) in the Interim Agenda under both Option 1 and Option 2. For example, a tolerance of 104 in^3 is technically extended up to, but not including a 2 in meter rather than just beyond the 1½ in size mark. A different type of graph might be considered to better illustrate the comparison.

- For both Option 1 and 2, the resolution to which the metric values in the tables are reported should be reviewed and reconsidered relative to the typical graduation size of a metric prover. For example, the maximum value of the subdivision on a 200 L prover is 50 mL according to NIST Handbook 105-3. The resolution of the equivalent metric values presented in the proposed tables is to 0.01 L or 10 mL. Given the prover can only be read to a division of 50 mL (0.05 L), the metric values presented are at a higher resolution than the graduations on the prover gauge plate and, therefore, are not realistically readable on the prover.

- An alternative to consider for presenting metric versions of the tolerance is to present the metric tolerances in a separate table so that examples are more reflective of the actual numerical values for meters marked with flow rates in metric units.

- In Option 2, the metric tolerance values for meters with marked maximum flow rates below 100 gpm do not match the proposed changes shown in the corresponding paragraph T.4. The tolerances are calculated at 0.5 % rather than 0.6 %. (This was also noted by the WWMA and CWMA.)

- Present the proposed changes by striking the existing table and showing the proposed changes as a replacement table. As proposed, it initially appeared to some that the tolerance for a 2 in meter, for example, has been reduced from 104 in^3 to 34 in^3. However, the tolerance for that size meter (which is typically a 100 gpm maximum) is actually 115 in^3.

- Move the statement "Refer to T.4. for meters with flow rates not listed" to the bottom of the table rather than in the title.

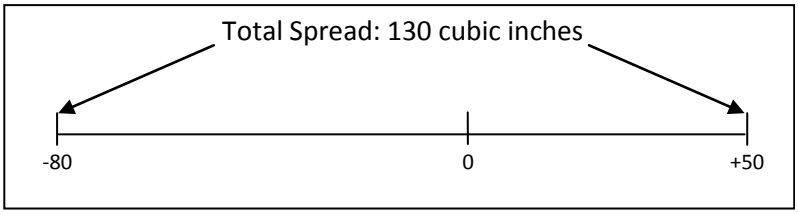
- Include examples of the current tolerance and the two options in a tabular format to allow easier comparison, and illustrate the impact of the two options. (WMD provided two examples for the Committee to consider along with proposed changes to the tolerance tables in both options to correct the errors noted above.)

The Committee generally agreed with the concept of basing the tolerances on the marked maximum flow rate of the meter rather than on the marked meter size. Additionally, while recognizing that one goal of the proposal was to reduce what the submitter considered to be an unreasonably large tolerance for smaller meters, the Committee expressed concern about the magnitude of the impact on these meters. The Committee also heard comments from one meter manufacturer indicating that consideration should be given to different technology types, since turbine meters, for example, may have different typical flow rate ranges than a positive displacement meter. After reviewing the two options (Option 1 and Option 2) presented by the submitter; considering the comments made during the open hearings and in the regions; and reviewing the examples provided by WMD, the Committee agreed that additional work is needed on this item. Consequently, the Committee decided to designate the status of the item on its agenda as an "Informational" item to allow additional time for this information to be collected and reviewed.

The Committee would specifically like feedback from meter manufacturers and weights and measures jurisdictions regarding the impact on smaller meters, including results from past tests that could be analyzed against the current and proposed tolerances. In the meantime, the Committee modified the two options proposed to correct the errors noted in the discussion above and agreed to include the following examples provided by WMD to illustrate the impact of the tolerances.

- **Example A** illustrates a 2 in meter with max flow of 100 gpm:

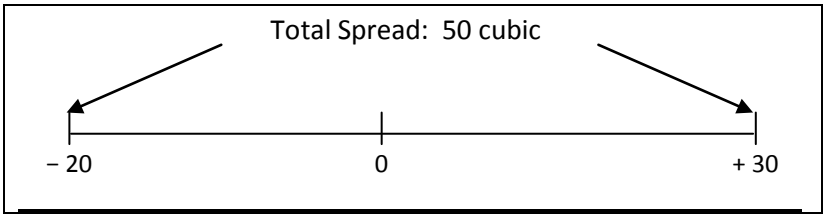
Example A **Sample Results of a Product Depletion Test**	
Meter Size:	2 in
Minimum Flow Rate:	20 gpm
Maximum Flow Rate:	100 gpm
Normal Test Draft Results	+ 50 in^3
Product Depletion Test Draft Results	− 80 in^3
Difference [Normal Test Result – Product Depletion Test Result]	130 in^3



Comparison of Tolerances (Current vs. Proposed) for Example A (2 in, 100 gpm max)			
	Current Tolerance	**Proposal #1 (0.5 %)**	**Proposal #2 (0.6 %)**
Product Depletion Tolerance Calculation		0.5 % x Max Marked Flow Rate = 0.005 x 100 = 0.5 gal	0.6 % x Max Marked Flow Rate = 0.006 x 100 = 0.6 gal
Product Depletion Tolerance	137 in^3	115.5 in^3	138.6 in^3
Conclusion: Does System "Pass" or "Fail" the Product Depletion Test?	Pass	Fail	Pass

- **Example B** illustrates a 1-1/4 in meter with a max flow of 30 gpm.

Example B Sample Results of a Product Depletion Test	
Meter Size:	1¼ in
Minimum Flow Rate:	5 gpm
Maximum Flow Rate:	30 gpm
Normal Test Draft Results	+ 30 in^3
Product Depletion Test Draft Results	− 20 in^3
Difference [Normal Test - Product Depletion Test Results]	50 in^3



Comparison of Tolerances (Current vs. Proposed) for Example B (1-1/4 in, 30 gpm max)			
	Current Tolerance	**Proposal #1 (0.5 %)**	**Proposal #2 (0.6 %)**
Product Depletion Tolerance Calculation		0.5% x Max Marked Flow Rate = 0.005 x 30 = 0.15 gal	0.6% x Max Marked Flow Rate = 0.006 x 30 = 0.18 gal
Product Depletion Tolerance	104 in^3	34.6 in^3	41.6 in^3
Conclusion: Does System "Pass" or "Fail" the Product Depletion Test?	Pass	Fail	Fail

At their 2011 spring Meetings, the CWMA and NEWMA expressed continued support for maintaining this item as Informational on the Committee's agenda. The Committee also received comments through the NCWM Online Comment System from Mr. Randy Jennings, Tennessee, supporting the concept of the proposed changes, but concurring with the Committee's position that data is needed to analyze the impact of any proposed change. Mr. Jennings also questioned whether or not data from NTEP tests might be considered as a source of data.

At the 2011 NCWM Annual Meeting, the Committee reiterated its need for data to evaluate the impact of any proposed tolerances changes, noting that, to date, no data has been submitted to the Committee.

The Committee asks that the following test data be submitted to assist the Committee in making this assessment:

- make and model of the meter;
- marked maximum flow rate of the meter;
- actual delivery rate during the normal test;
- error (in cubic inches or percent) for the normal test;
- actual delivery rate during the product depletion test;
- error (in cubic inches or percent) for the product depletion test; and
- type of test (e.g., routine or follow-up).

[**Technical Advisor's Note***: This list was updated by the Committee following the Annual Meeting to include additional data points relative to the "normal test" and the "type of test."*]

For information on submitting data, contact the NIST Technical Advisor, Ms. Tina Butcher by e-mail at tina.butcher@nist.gov or by phone at (301) 975-2196. The Committee also plans to distribute a request on WMD's Weights and Measures Directors' list serve for jurisdictions to submit data.

Mr. Karimov, speaking on behalf of the MMA, indicated the MMA continues to be concerned about the impact of any proposed changes on smaller meter sizes, particularly meter sizes that are less than 1½ in.

The Committee looks forward to receiving additional proposals and requested data by November 1, 2011, so that the information can be considered at the 2012 NCWM Interim Meeting and the item can remain on the Committee's agenda.

336 WATER METERS

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

(This item was adopted.)

Source: Western Weights and Measures Association (WWMA).

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

Item Under Consideration:

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

(Added 2011)

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

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

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

At its 2010 Annual Meeting, the SWMA heard no opposition to establishing a definition for "utility-type water meter." Like the WWMA, the SWMA noted that the definition as originally proposed included the word that was being defined in the definition itself and was, therefore, still not clear. The SWMA S&T Committee reviewed alternative language developed by the WWMA, and agreed the alternative language was preferable. Consequently, the SWMA voted to recommend that the language as modified by the WWMA move forward as a Voting item on the NCWM S&T Committee Agenda.

During its open hearings at the 2011 Interim Meeting, the Committee heard comments from Mr. George DeJarlais, Badger Meter, speaking on behalf of the water meter manufacturers present at the meeting (Badger Meter, Neptune Technology Group, and Master Meter). Mr. DeJarlais reported the above meter manufacturers support the proposed definition with revisions suggested by the WWMA. The Committee Chairman also advised meeting participants that the Committee received letters of support from Sensus Metering and Elster AMCO. Also, during the open hearings, Ms. Juana Williams, NIST WMD, suggested the following two alternative definitions for the Committee to consider:

utility-type water meter. – A device used for the measurement of water ~~generally applicable to meters~~ installed in residences or business establishments. ~~excluding batching meters.~~ [3.36]

(Added 201X)

or:

utility-type water meter. A device used for the measurement of water, generally ~~applicable to meters installed~~ of an equivalent design to those meters installed by water utilities in residences or business establishments, excluding batching meters. [3.36]

(Added 201X)

The Committee reviewed the alternate proposals provided by WMD. The Committee felt that, in the first option, the deletion of the term "generally" would make the definition too limiting in its application, and the exclusion for batching meters needs to be retained. The Committee also discussed the second proposal, but still felt that the version provided by the WWMA was more appropriate. Given that the Committee heard no opposition to the recommendation proposed by the WWMA, the Committee agreed to recommend this item for a vote as presented in the Recommendation above.

The Committee also acknowledged in its discussions that, at some point, the code may need to be modified to better address water meters used in other applications, such as water vending applications. However, for the present time, the Committee hopes that the proposed definition at least clarifies the use of the term "utility-type water meter."

At their spring 2011 meetings, NEWMA and CWMA expressed support for the proposal as written. The Committee received one comment in support of the proposal from the NCWM Online Comment Forum and a letter of support from Master Meter.

During open hearings at the July 2011 NCWM Annual Meeting, the Committee heard support for the proposed language from Mr. Andre Noel, Neptune, who indicated that he also spoke on behalf of other water meter manufacturers, including Sensus and from Ms. Kristin Macey, California. The Committee also received letters of support for the proposed definition from Master Meter and Badger.

342 FARM MILK TANKS

342-1 V N.5.1. Verification of Master Metering Systems

(This item was adopted.)

Source: Central Weights and Measures Association (CWMA) (This item was originally part of the 2010 Agenda Item 360-2 Developing Items Part 4.42, Farm Milk Tanks – Item 1: N.5.1. Verification of Master Metering Systems.) (This item was previous indicated as Item 442-1 in the 2011 Interim Agenda [Pub 15].)

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

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

> **N.5.1. Verification of Master Metering Systems.** – A master metering system used to gauge a milk tank shall be verified before and after the gauging process. A master metering system used to calibrate a milk tank shall be verified before starting the calibration and re-verified at least every quarter of the tank capacity, or every 2000 L (500 gal), whichever is greater. **The process of re-verifying the master metering system at every quarter of the tank, or every 2000 L (500 gal) may be waived if the system is verified using a NIST traceable prover with a minimum of two tests immediately before and one test immediately after the gauging process and that each test result is within 25 % of T.3. Basic Tolerance Values.**
>
> (Added 2001)**(Amended 2012)**

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

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

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

At the 2010 NCWM Annual Meeting, the Committee heard comments from Mr. Andersen, New York, in which he reiterated NEWMA's request to place this item on the Committee's 2011 Interim agenda. In response to NEWMA's request, the Committee agreed to include this item on its 2011 Interim agenda and submitted it to the 2010 fall regional weights and measures association meetings.

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

During its 2010 WWMA Annual Technical Conference, the WWMA S&T Committee reviewed the submitted data in a file titled "cali_massflowsheet.xlx." The WWMA S&T Committee raised questions about how to interpret the data, noting that the unit of measure for the reported difference between meter and prover readings is inconsistent with the units of measure for the prover and meter indications. The WWMA S&T Committee commented that this inconsistency along with a lack of information describing test parameters, legends, and column headings made it difficult to analyze the data. The WWMA recommends the NCWM S&T Committee seek additional information on the data describing the test conditions and type of mass flow meter used. Additionally, a general summary of the data would help in assessing the proposal as would a clarification of whether or not the reduced re-verification applies to other meter technologies (e.g., PD meter, turbine meter, etc.). The WWMA recommends that this item move forward as an Informational item on the NCWM Interim agenda to allow time to seek the additional information on the submitted data.

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

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

During its open hearings at the 2011 Interim Meeting, the Committee heard comments from Mr. Koeberle, who outlined a history of this proposal from his organization's perspective and described the challenges posed by the current language. He acknowledged that there may be questions regarding how to interpret the data submitted with the proposal, and offered to work with the Committee in responding to those questions. He also noted that he had additional data to provide to the Committee in support of the proposed change.

Mr. Ross Andersen, retired Director of the New York Bureau of Weights and Measures, speaking on his own behalf, expressed his support for this proposal. In addition to some of the points already made, he noted that technology has changed over the years and some of the influences previously experienced with positive displacement meters can be eliminated or reduced through the use of mass flow meters.

Ms. Juana Williams, NIST WMD, shared some additional technical points for the Committee to consider in its deliberations. While noting that the phrase "capable of operating within 25 % of applicable tolerance" is already included in text of N.5., NIST WMD questioned whether or not the reference might need further elaboration to clarify how to define when a system meets that criterion. For example, should a minimum number of runs be specified or repeatability criteria referenced?

During the Committee's work session, Mr. Koeberle provided an explanation to the Committee of the differences between a calibration (i.e., developing a new chart to correspond to volumes in the tank established during testing) and verification (i.e., verifying the "as found" accuracy of a tank, a process also known as "gauging") of farm milk tanks, and the procedures used by his agency to test them. Mr. Koeberle provided additional results of tests that

were completed by his agency, including a cover letter describing the format of the data sheets. The letter and this data are included in Appendix C to this report. Mr. Koeberle indicated that an interim test of the meter must be conducted at each 500 gal, and he noted that, in the process of conducting these interim tests, additional uncertainty is introduced into the test process due to purging of lines, switching of valves, and other variables.

The Committee also discussed the comments raised by NIST regarding whether or not the reference to testing "within 25 %" needed additional qualification, such as specifying the amount of testing, limits of repeatability, or other criteria. The Committee discussed whether interim testing of the meter is necessary if a test of the meter before and after testing of the farm milk tank showed that the master meter was in tolerance. Committee members with active farm milk tank testing programs indicated that the current test of the meter before a test was begun and after a test had concluded would satisfy their concerns that the meter was accurate. Individual jurisdictions will determine the suitability of the test equipment based on fundamental considerations in HB 44. The Committee believes that the current language allows flexibility for jurisdictions to make the assessment on a case-by-case basis and that this flexibility needs to be maintained.

After reviewing the comments received during the open hearings, input from the regions, data and testimony provided by Mr. Koeberle, and other points raised during its work session discussions, the Committee agreed to recommend the proposal outlined in the "Item Under Consideration" for a Vote.

At their spring 2011 meetings, NEWMA and the CWMA expressed support of the proposal as written.

At the 2011 NCWM Annual Meeting, NIST WMD provided the Committee with additional technical comments to assist the Committee in its analysis of this issue and spoke to this information during the open hearings. NIST WMD acknowledged that the intent of the proposal is to eliminate unnecessary testing and reduce uncertainties in the test process. However, WMD reiterated its concerns that the reference in the proposed language to "capable of operating within 25 %" may need further elaboration to clarify how to define when a system meets this criterion and ensure consistent interpretation. WMD believes that the language proposed in the Committee's Interim Report was unclear with regard to the instances in which the master metering system has to be verified only before and after the gauging process, and in which instances the systems has to be verified at every quarter of the tank. For example, is "calibrating" a farm milk tank the same as "gauging" a farm milk tank? If yes, then there is currently no guidance on when to conduct intermediate verification of the master metering system, or when the intermediate tests are not necessary.

Working with Mr. Koeberle, WMD technical advisors developed and presented to the Committee two alternative versions of the language that might help to improve consistency in the interpretation and application of the requirements. The Committee agreed upon one of the alternatives, which is shown in the "Item Under Consideration" above, noting that they felt this language would improve consistency in applying N.5.1. During the opening hearings, Mr. Koeberle offered support for the above modified language. Hearing no opposition to the modified proposal, the Committee presented it for a Vote.

WMD also noted that additional work is needed to correct similar inconsistencies in terminology in the current code and suggested that the Committee consider creating a Developing item for inclusion in next year's NCWM cycle to address these inconsistencies.

360 OTHER ITEMS

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

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

NIST Weights and Measures Division (WMD) Contact List for International Activities	
Contact Information	**Responsibilities**
Postal Mail and Fax for All Contacts:	NIST WMD 100 Bureau Drive MS 2600 Gaithersburg, MD 20899-2600 Tel: (301) 975-4004 Fax: (301) 975-8091
Mr. John Barton (LMDG) (301) 975-4002 john.barton@nist.gov	•R 21 "Taximeters" •R 50 "Continuous Totalizing Automatic Weighing Instruments (Belt Weighers)" •R 60 "Metrological Regulations for Load Cells" •R 106 "Automatic Rail-weighbridges"
Mr. Kenneth Butcher (LMG) (301) 975-4859 kenneth.butcher@nist.gov	•D 1 "Elements for a Law on Metrology" •TC 3 "Metrological Control" •TC 3/SC 2 "Metrological Supervision" •TC 6 "Prepackaged Products"
Mr. Steven Cook (LMDG) (301) 975-4003 steven.cook@nist.gov	•R 76 "Non-automatic Weighing Instruments"
Dr. Charles Ehrlich (ILMG) (301) 975-4834 charles.ehrlich@nist.gov	•CIML Member for the United States •V1 "International vocabulary of terms in legal metrology (VIML)" •V2 "International vocabulary of basic and general terms in metrology (VIM)" •B3 "OIML Certificate System for Measuring Instruments" •B6 "OIML Directives for the Technical Work" •B 10 "Framework for a Mutual Acceptance Arrangement (MAA) on OIML Type Evaluations" •TC 3/SC 5 "Expression of Uncertainty in Measurement in Legal Metrology Applications," "Guidelines for the Application of ISO/IEC 17025 to the Assessment of Laboratories Performing Type Evaluation Tests" •TC 3 "Metrological Control" •ISO/IEC Guide to the Expression of Uncertainty in Measurement"
Mr. Richard Harshman (LMDG) (301) 975-8107 richard.harshman@nist.gov	•R 51 "Automatic Catchweighing Instruments" •R 61 "Automatic Gravimetric Filling Instruments" •R 107 "Discontinuous Totalizing Automatic Weighing Instruments" (totalizing hopper weighers) •R 134 "Automatic Instruments for Weighing Road Vehicles In-Motion and Measuring Axle Loads"
Ms. Diane Lee (LMDG) (301) 975-4405 diane.lee@nist.gov	•R 59 "Moisture Meters for Cereal Grains and Oilseeds" •R 92 "Wood Moisture Meters – Verification Methods and Equipment" •R 121 "The Scale of Relative Humidity of Air Certified Against Saturated Salt Solution" •TC 17/SC 8 "Measuring Instruments for Protein Determination in Grains"

NIST Weights and Measures Division (WMD) Contact List for International Activities	
Contact Information	**Responsibilities**
Mr. Ralph Richter (ILMG) (301) 975-3997 ralph.richter@nist.gov	•D 11 "General Requirements for Electronic Measuring Instruments" •R 35 "Material Measures of Length for General Use" •R 49 "Water Meters" (Cold Potable Water & Hot Water Meters) •R 71 "Fixed Storage Tanks" •R 80 "Road and Rail Tankers" (static measurement) •R 85 "Automatic Level Gauges for Measuring the Level of Liquid in Fixed Storage Tanks" •R 95 "Ship's Tanks" •R 117 "Measuring Systems for Liquids Other Than Water" (all measuring technologies) •R 118 "Testing Procedures and Test Report Format for Pattern Examination of Fuel Dispensers for Motor Vehicles" •TC 3/SC 4 "Verification Period of Utility Meters Using Sampling Inspections" •R 137 "Gas Meters" (all measuring technologies) •R 140 "Measuring Systems for Gaseous Fuel" (i.e., large pipelines) •ISO TC 30/SC 7 "Water Meters"
Dr. Ambler Thompson (ILMG) (301) 975-2333 ambler@nist.gov	•D 16 "Principles of Assurance of Metrological Control" •D 19 "Pattern Evaluation and Pattern Approval" •D 20 "Initial and Subsequent Verification of Measuring Instruments and Processes" •D 27 "Initial Verification of Measuring Instruments Using the Manufacturer's Quality Management System" •D 31 "General requirements for software controlled measuring instruments" •R 34 "Accuracy Classes of Measuring Instruments" •R 46 "Active Electrical Energy Meters for Direct Connection of Class 2"
Ms. Juana Williams (LMDG) (301) 975-3989 juana.williams@nist.gov	•R 81 "Dynamic Measuring Devices and Systems for Cryogenic Liquids" •R 139 "Compressed Gaseous Fuels Measuring Systems for Vehicles"

LIST OF ACRONYMS			
B	Basic Publication	LMDG	Legal Metrology Devices Group
CIML	International Committee of Legal Metrology	P	Project
D	Document	R	Recommendation
ILMG	International Legal Metrology Group	SC	Subcommittee
LMG	Laws and Metrics Group	TC	Technical Committee

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

360-2 D Developing Items

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

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

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

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

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

Mr. Ted Kingsbury, Measurement Canada, Technical Advisor
Ms. Tina Butcher, NIST, Technical Advisor
Mr. Steve Cook, NIST Technical Advisor
Mr. Richard Harshman, NIST, Technical Advisor

Specifications and Tolerances Committee

Appendix A – Developing Items

Item 360-2: Developing Items

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

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

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

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

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

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

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

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

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

At the 2010 WWMA Annual Technical Conference, Mr. Stephen Langford, Cardinal Scales, stated during the open hearings that he is a member of the WG and supports adding language defining performance parameters of WIM devices for use in law enforcement. Mr. Langford added that the WG will be considering other existing standards to help develop the language in HB 44 (e.g., OIML R 134 "Automatic instruments for weighing road vehicles in motion and measuring axle loads"). Mr. Kurt Floren, Los Angeles County, added that even though these devices are non-commercial they are covered under the scope of HB 44 General Code Application paragraph G-A.1.(c) Commercial and Law Enforcement Equipment.

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

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

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

At the Committee's 2011 NCWM Interim Meeting open hearings, Juana Williams, NIST WMD, provided the following update on the progress of weigh-in-motion (WIM) standards development:

Purpose of the Project: The Federal Highway Administration's (FHWA's) Office of Freight Management and Operations recognized a need to encourage uniformity in the design, testing, installation, and performance of WIM technology and subsequently encourage acceptance by prosecution agencies (administrative or judicial) regarding the validity of WIM technology's role in supporting commercial motor vehicle (CMV) weight enforcement.

In response to this need, and recognizing the credibility of having a standard included in HB 44 because it lends integrity and is more recognizable in legal actions, the FHWA seeks to integrate WIM technology into the "handbook." The FHWA recently contracted the services of the Texas Transportation Institute—The Texas A&M University System and Battelle (a private company) to begin this process. Additionally, a small oversight committee was formed by the FHWA, made up of three representatives from the FHWA, a NIST Technical Advisor, and a representative of a U.S. manufacturer of WIM equipment to validate that each contract deliverable is completed according to contract.

The intended application of the proposed new code is for screening purposes only (i.e., for screening/sorting commercial vehicles for possible violations of FHWA vehicle weight requirements). It is anticipated that as WIM technology continues to advance, this code may have a much broader application sometime in the future.

As a first step in this effort, the contracted team was tasked to develop an initial, detailed Project Work Plan intended to guide activities and establish lines of communication from project inception to project completion. This deliverable has been completed and was recently submitted to the Project Oversight Committee for consideration.

The next step will be to establish a work group (WG) from the WIM technology stakeholder community. This process is already underway, and the WG will be comprised of representatives from state departments of transportation, state law enforcement agencies, weights and measures officials, WIM technology manufacturers and vendors, academic researchers, and others. The initial meeting of the WG is planned, although not yet scheduled, for the middle of February 2011.

It is anticipated that a final draft code will be ready for consideration by the NCWM in 2012. For additional information regarding this project, contact Mr. Rick Harshman, NIST WMD by e-mail at richard.harshman@nist.gov; by telephone at 301-975-8107; or by mail at NIST, 100 Bureau Drive – MS 2600, Gaithersburg, MD, 20899-2600.

Mr. Max Gray, State Director of Florida commented that although he didn't have any issues regarding developing standards for WIM systems, he did not believe that inclusion of a new WIM code into HB 44 was appropriate because the application of the proposed code was for screening purposes only.

Mr. Langford supported the development of the standard, and stated that the "Application" section of the General Code not only applies to commercial equipment, but also equipment used in law-enforcement and for the collection of statistical information by government agencies. He also stated that it was too early to make a determination on how much work would be involved in the testing of WIM systems because the WG had yet to be formed.

The CWMA and NEWMA supported further development of this item at their 2011 spring Annual Meetings.

At the 2011 NCWM Annual Meeting, Rick Harshman, NIST Technical Advisor to the WIM WG provided the following update:

Mr. Harshman reported that the project is progressing slower than anticipated. A few months ago the project team leader resigned due to a relocation of her residence to another state. Dr. Dan Middleton, Texas Transportation Institute (TTI), was then selected to be the new project team leader. Since the 2011 Interim Meeting, the Project Oversight team has developed and agreed on a WG charter, which among other things defines the rules of the WG, including voting rights, membership balance, etc. Candidates for the WG have been identified, invitations to participate circulated, and members selected based on returned invitations. As of April 2011, 35 candidates had agreed to participate on the WG. The initial kickoff meeting is scheduled July 28, 2011, in Dallas, Texas. A second face-to-face meeting is planned, perhaps later in the year.

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

Source: 2010 Carryover Developing Item 360-3, Part 3.30-Item 1. This item originated from WMD and the regional associations and first appeared on the Committee's 2007 agenda.

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

Item Under Consideration: In 2008 and 2009, the Committee considered a proposal to make modifications to HB 44 Section 3.30. LMD Code to address price posting and computing capability for RMFDs. Full details of the recommendation are found in Agenda Item 330-3 in the Committee's 2008 and 2009 Final Reports. The Committee believes that changes are needed to the LMD Code; however, based on comments received it does not believe the proposal adequately addressed the community's concerns. In 2010, the Committee received approval to form an NCWM Task Group (TG) on RMFD price posting and computing capability (PPCC) to review and recommend necessary changes to the LMD Code by January 2012.

Key Points:

- Current LMD Code requirements relative to unit price posting and selection and total price computation were developed to address marketing practices in place in the early 1990s; primarily cash/credit forms of payment.

- Marketing practices have changed since the 1990s, and the LMD Code does not adequately address these changes with regard to the display, posting, and selection of unit price information or total price information at various points in a transaction.

- There appears to be general agreement in the weights and measures community that changes are needed to the LMD Code in HB 44 to better reflect current market practices.

- Comments indicate the proposal considered in 2008-2009 by the Committee did not adequately address concerns, particularly on the parts of weights and measures officials.

- Weights and measures officials are concerned that customers be given adequate information at all points of the transaction, not just at the end.

- Regional weights and measures associations and industry comments indicated support for a WG to further develop this issue.

- The 2010 S&T Committee established a TG to further develop this issue and present an alternative recommendation for its consideration in 2012.

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

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

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

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

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

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

The regional weights and measures associations agreed that changes are needed and encouraged WMD to continue development of the issue. D uring the 2007 NCWM Interim Meeting, the S&T Committee agreed to add to its agenda a Developing item to begin to address these issues. At the 2008 NCWM Interim Meeting, Ohio Weights and Measures submitted a proposal to modify various sections of the LMD Code to the Committee. With a specific proposal to consider, the 2008 Committee elevated the item from Developing to Informational status for further review and input.

In 2008, the CWMA noted that although the proposal was a good start it did not address what was happening in the marketplace. T he CWMA also recommended establishment of a small WG to further develop the issue and encouraged consideration of points such as the following:

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

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

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

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

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

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

The Committee heard comments from all four regional weights and measures associations (including the CWMA), industry, and individual NCWM members that, while changes are needed to the LMD Code, the proposal on the NCWM S&T Committee's 2008 and 2009 agendas did not meet the needs of the marketplace (see the Committee's 2008 and 2009 Final Reports for details of specific concerns). A key concern raised by weights and measures officials was the importance for consumers to have full information about the purchase price of the product before they dispense the fuel and to be able to follow all aspects of the transaction.

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

At its 2010 open hearings, the S&T Committee received positive comments regarding NIST's reallocation of resources to this project and agreed that reviewing and revising current requirements is important. The Committee continued to strongly support the intent of the proposal and recognized that significant additional development is needed. The Committee believes that this can best be done through an S&T TG, and decided to give this item Developing status until the TG develops a proposal for consideration by the Conference. After collaborating with NCWM Chairman, Mr. Randy Jennings, the Committee Chair indicated that the TG should be chaired by an NCWM voting member under the technical direction of NIST, and report to the NCWM S&T Committee. The Committee asked that Ms. Williams collaborate with the S&T Chair regarding possible candidates for the TG's chair position, based on those who have indicated an interest in serving on the TG. The Committee asked that the TG provide frequent updates on its progress to the Committee and to the regional weights and measures associations. The Committee also asked that the TG communicate a work plan and time line after its first official meeting.

Prior to the July 2010 NCWM Annual Meeting, Chair Jeff Humphreys, Los Angeles County (California) Weights and Measures, and Vice Chair Fran Elson-Houston, Ohio, were appointed to lead the TG. On July 11, 2010, the RMFD Price Posting and Computing Capability (PPCC) Task Group (TG) held its first formal meeting. The TG expressed its thanks to its sponsor the NCWM S&T Committee and also to NCWM members for their contributions made up to this session.

The TG was tasked with reviewing the current NIST Handbook 44 Section 3.30 LMD Code to determine if the code requirements address rapidly changing practices for marketing retail motor-fuels to the general public. The TG was also tasked with developing proposals for modifying those codes that need changing and preparing them for a review by the S&T Committee.

Since July 2010, the TG has made progress in the following areas to achieve its goals:

(1) September 2010 – Established a Work Plan (to include a project timeline) approved by the S&T Committee;

(2) September 2010 – Developed a Motor-Fuel Marketing Method Information Form approved by the S&T Committee;

(3) September 2010 – Recruited and confirmed 13 new TG members who are stakeholders affected by these marketing practices who represent the following organizations/agencies/associations/sectors:

CWMA	Convenience Store Associations;
NEWMA	Discount Programming/Point of Sale Systems;
SWMA	Petroleum Marketers Associations;
WWMA	RMFD Manufacturers;
NTEP	Weights and Measures Consultants.

(4) October 21, 2010 – Web/Teleconference Meeting;

(5) December 14, 2010 – Web/Teleconference Meeting;

(6) January 23, 2011 – In-Person Meeting; and

(7) Upcoming Web/Teleconference Meetings are planned for February 23, 2011, and March 22, 2011.

The NCWM has provided the TG with two resources: a web page and a list serve e-mail system. The web page is available as a central point for posting TG documents, photos, etc., so these working documents and information can be viewed or downloaded. The website allows the TG to work more efficiently through draft documents. The NCWM Listserv allows the TG to communicate ideas and proposals, etc. by e-mail.

The TG began its work by requesting additional information to ensure that it does not reinvent code sections that already work to address marketing practices. The TG was interested in any recent legislation or policies enacted to address these marketing scenarios and will continue to accept this information. The TG plans to examine various examples of marketing practices to establish some general categories for classifying these marketing practices and later analyzing if a practice is adequately addressed by any codes it might develop. The TG developed a Motor-Fuel Marketing Method Information Form for stakeholders to provide information on newly emerging marketing practices they encounter which are either: (1) not addressed in the code; (2) result in non-uniform interpretation of the application of code sections; or (3) are difficult to enforce because of conflicting codes that apply to the equipment's design and use.

The primary focus of the TG's work has been six existing HB 44 LMD Code requirements that apply to RMFDs and address the equipment's:

- computing capability/suitability;
- receipts;
- unit price displays;
- unit price selection and Control; and
- exemptions from these requirements.

The TG outlined several principles that might be considered as the basis for any marketing practice used in motor-fuel sales through a RMFD. These principles would:

- ensure transparency of the transaction;
- allow for customer selection of the unit price;
- result in the unit price being correctly applied; and
- provide detailed transaction information available on the receipt.

These principles would allow sufficient flexibility for the consumer and avoid unintentional errors that the weights and measures community has observed in the absence of requirements for past marketing schemes.

Since multiple agency requirements apply to service station transactions at RMFDs for street signage, credit card regulations, etc., at some point the TG may need to determine if there are other laws and regulations that should be examined for conflicts or redundancy. The TG has discussed and will continue to monitor the Dodd-Frank Wall Street Reform and Consumer Protection Act, and its effects on discounts offered for motor-fuel purchases based on payment made with various types and levels of credit/debit cards. The Dodd-Frank Act is an extensive piece of legislation intended to offer consumer protections and improve practices and services in the U.S. financial system. The TG plans to work with its membership and available resources to ensure that any requirements it develops are in harmony with this Act.

The TG has provided summaries of its October 2010 and December 2010 Web/Teleconference Meetings to the January 2011 S&T Committee to update the Committee on its work. During the January 2011 NCWM Interim

Meeting open hearing session, TG Chair Humphreys also provided an update on the TG's work to the entire NCWM.

At the 2011 NCWM Annual Meeting, Mr. Jeff Humphreys, Chairman of the NCWM TG on RMFD Price Posting, provided the Committee with an update on the progress of the TG.

To provide comments or submit questions to the TG, please contact NIST WMD Technical Advisor Ms. Juana Williams by e-mail at juana.williams@nist.gov, by telephone at (301) 975-3989, or in writing at NIST 100 Bureau Drive – Stop 2600, Gaithersburg, MD 20899-2600.

Appendix B - Attachments

S&T Agenda Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) – Examples of Repaired Devices/Repaired Elements

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

Section I
Examples of Repaired Devices/Repaired Elements
(no metrological change)

	Remanufactured Device	Remanufactured Element	Still Traceable to NTEP CC	Marking Required
Weighing Activity				
I-1-W A scale that is disassembled for the purpose of cleaning and repairing pivots and bearings this activity covers cleaning and packing bearings.	No	No	Yes	No
I-2-W A device in which the electronic components have been changed on site using original manufacturer's factory components parts or NTEP traceable replacement parts.	No	No	Yes	No
I-3-W A weighing element that is replaced on site with original manufacturer's factory parts or NTEP traceable replacement parts. This does not prohibit repairs by other than the original manufacturer.	No	No	Yes	No
I-4-W A Class III L scales in which a section adjustment (mechanical or electronic) is made and some disassembly is required.	No	No	Yes	No
I-5-W A mechanical scales in which a nose iron is adjusted and some disassembly is required.	No	No	Yes	No
I-6-W Replacement of Liquid Crystal Display (LCD) or non-metrological computer boards or chips.	No	No	Yes	No

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

	Remanufactured Device	Remanufactured Element	Still Traceable to NTEP CC	Marking Required
I-7-W Replacement of pivots and bearings on mechanical scales. **NOTE:** Pivots and bearings would have to meet the original manufacturer's specifications for the scale to operate correctly.	No	No	Yes	No
I-8-W Replacement of some or all load cells with load cells identical (same manufacturer, make and model) to those removed.	No	No	Yes	No
I**-9-W** Replacement of some or all load cells with metrologically equivalent (nmax, vmin, etc.) load cells from a different manufacturer, provided the load cells are of the same basic type that have an NTEP CC and can be replaced without modification to the basic design of the load cell mounting assembly.	No	No	Yes	No
I-10-W Replacement of all load cells of a particular technology (analog, digital, and hydraulic) in a s cale system with approved and compatible digital load cells that have an NTEP CC provided the cells can be replaced without any modification to the basic design of the load cell mounting assembly.	No	No	Yes	No
Measuring Activity				
I-1-M Disassembly of a motor fuel dispenser for the purpose of replacing a meter gasket.	No	No	Yes	No
I-2-M A device in which the electronic components have been replaced on site using original manufacturer's factory components, parts, or NTEP traceable replacement parts.	No	No	Yes	No

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

	Remanufactured Device	Remanufactured Element	Still Traceable to NTEP CC	Marking Required
I-3-M Any measuring element that is replaced on site with original manufacturer's factory parts or NTEP traceable replacement. T his does not prohibit repairs by other than the original manufacturer.	No	No	Yes	No
I-4-M Replacement of nozzles on gasoline dispensers.	No	No	Yes	No
I-5-M Replacement of LCD or non-metrological computer boards or chips.	No	No	Yes	No
I-6-M Adjustment of ranger gears on meters (some disassembly required). This activity applies to meters calibrated with a r ange of gears rather than an adjustor.	No	No	Yes	No
I-7-M A service agency replaces a meter that cannot be brought into the proper calibration with a used meter (at the service station) of the same model and the meter is recalibrated.	No	No	Yes	No
Section II - Examples of Remanufactured Devices/Remanufactured Elements (no metrological change)				
Weighing Activity				
II-1-W A scale that is disassembled for the purpose of checking for worn parts, cleaning the scale, and replacing some or all of the scale's load cells with remanufactured load cells provided the load cells are remanufactured by the original manufacturer or are remanufactured metrologically equivalent (nmax, vmin, etc.) load cells with an NTEP CC and are identical to those removed.	No	Yes – Load Cells No – Weighing Element	Yes	Yes – (Load Cells) No – (Weighing Element Original markings meet requirement)

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

	Remanufactured Device	Remanufactured Element	Still Traceable to NTEP CC	Marking Required
II-2-W A service agency replaces a digital indicating element of a floor scale with the same model indicator remanufactured by a firm other than the original manufacturer of the scale. **NOTE:** The remanufacturer made no design change to the indicator.	No	Yes – Indicating Element No – Weighing Element	Yes	Yes (Indicating Element only)
II-3-W A service agency completely disassembles a co unter computing scale in their shop, checks for worn parts and replaces all worn parts (without replacing the load cell(s)) with remanufactured parts (not original manufacturer but no design change), replaces other parts as needed, cleans and reassembles the scale for sale.	Yes	Yes	Yes	Yes
II-4-W A device or element is sent back to the original equipment manufacturer. The device is disassembled, checked for wear, parts are replaced or fixed as necessary, and the device is reassembled and made to operate like a new scale of the same type.	Yes	No	Yes	No (Original markings meet requirement)
II-5-W A device or element is sent to a company (not the original manufacturer). The device is disassembled, checked for wear, parts are replaced with Original Equipment Manufacturer (OEM) parts or fixed as necessary, and the device or element is reassembled and made to operate like a n ew device or element of the same type.	Yes	No	Yes	Yes
Measuring Activity				
II-1-M Complete disassembly of a motor fuel dispenser, checking for worn parts, cleaning the dispenser and replacement of all badly worn parts with parts identical (same manufacturer, make, and model) to those removed.	Yes	No	Yes	Yes

S&T Agenda Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) – Examples of Repaired Devices/Repaired Elements

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

	Remanufactured Device	Remanufactured Element	Still Traceable to NTEP CC	Marking Required
II-2-M A service agency replaces a meter on site that cannot be brought into the proper calibration in a dispenser with the same model meter remanufactured by a firm other than the original manufacturer of the dispenser. **NOTE:** The remanufacturer made no design change.	No	Yes	Yes	Yes (Element only)
II-3-M A service agency replaces a meter mechanical indicating element with the same model mechanical indicating element remanufactured by a firm other than the original manufacturer of the mechanical indicating element. **NOTE:** The remanufacturer made no design change.	No	Yes	Yes	Yes (Element only)
II-4-M A device is sent back to the original equipment manufacturer. The device is disassembled, checked for wear, parts are replaced or fixed as necessary, and the device is reassembled and made to operate like a new device or element of the same type.	Yes	No	&es	No (Original markings meet requirement)
II-5-M A company completely disassembles a motor fuel dispenser in their shop, checks for worn parts and replaces all worn elements with remanufactured elements (not original manufacturer but no design change), cleans and reinstalls the dispenser.	Yes	Yes	Yes	Yes
II-6-M A dispenser remanufacturer completely disassembles a motor fuel dispenser, replaces a meter that cannot be brought into the proper calibration with the same model meter remanufactured by another firm, fixes and/or replaces all other parts as needed, reassembles the dispenser for sale as a remanufactured dispenser.	Yes	Yes	Yes	Yes

S&T Agenda Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) – Examples of Repaired Devices/Repaired Elements

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

	Remanufactured Device	Remanufactured Element	Still Traceable to NTEP CC	Marking Required
II-7-M A company brings a motor fuel dispenser in their shop, fixes any leaks, replaces any meter which cannot be calibrated with a r emanufactured meter which can be calibrated (not original manufacturer but no design change), replaces other non functioning parts with new, used, or repaired parts which function, cleans, installs new graphics, and sends the dispenser out for installation. **NOTE:** The remanufacturer made no design change.	No	Yes	Yes	Yes (Element only)
II-8-M A device is sent to a co mpany (not the original manufacturer). The device is disassembled, checked for wear, parts are replaced with OEM parts or fixed as necessary, and the device is reassembled and made to operate like a new device of the same type.	Yes	No	Yes	Yes
Section III **Examples of Remanufacturing/Repairs/Modifications that Constitute a Metrological Design Change or a Violation of NTEP Policy**				
Weighing Activity				
III-1-W A company disassembles a scale, cleans the scale and checks for worn parts, then replaces hydraulic load cells with shear beam load cells. **NOTE:** Requires different mounting due to different type of cells.	Not Applicable	Not Applicable	No	Yes*
III-2-W A metrological change to Original Equipment Manufacturer (OEM) design of a weighing device or element.	Not Applicable	Not Applicable	No	Yes*
III-3-W Structural modifications to weighbridges. Scale changes that do not comply with UR. 4.3. Scale Modification	Not Applicable	Not Applicable	No	Yes*
III-4-W Replacing a l ever system with load cells.	Not Applicable	Not Applicable	No	Yes*

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

	Remanufactured Device	Remanufactured Element	Still Traceable to NTEP CC	Marking Required
III-5-W Substitution of a load cell or cells in a scale when the replacement cells were not repaired or remanufactured by the original manufacturer or authorized agent of the original manufacturer. The remanufactured load cell(s) does not have an NTEP CC. (NTEP Policy, see NCWM Pub. 14)	Not Applicable	Not Applicable	No	Yes*
III-6-W A company completely disassembles a counter computing scale in their shop, checks for worn parts and replaces all worn parts with remanufactured parts (not the original manufacturer but no design change) and load cell without an NTEP CC, replaces other parts as needed, cleans and reassembles the scale.	Not Applicable	Not Applicable	No	Yes*
Measuring Activity				
III-1-M A metrological change to the Original Equipment Manufacturer (OEM) design of a measuring device or element.	Not Applicable	Not Applicable	No	Yes*
III-2-M A dispenser remanufacturer adds temperature compensation to a dispenser, which was never approved for temperature compensation.	Not Applicable	Not Applicable	No	Yes*

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

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

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

III-1-W The 2000 edition of NCWM Pub 14 Weighing Devices Checklist for Load Cells Section A Program Description 5. Substitution of Metrologically Equivalent Load Cells in Scales states that metrologically equivalent

S&T Agenda Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) – Examples of Repaired Devices/Repaired Elements

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load cells from the same or a different manufacturer may be substituted into a scale provided that the substituted load cells can be placed in the scale without any modification to the design of the load cell mounting assembly.

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

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

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

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

III-6-W The 2000 edition of NCWM Pub 14 Weighing Devices Checklist for Load Cells Section A. Program Description 5. Substitution of Metrologically Equivalent Load Cells in a Scale states that load cells from the same or a different manufacturer may be substituted into a scale provided that the load cells to be substituted have been evaluated separately and have a CC. **III-1-M** NIST Handbook 130, Uniform National Type Evaluation Regulation Section 4. Prohibited Acts and Exemptions (9) Repaired Device and (10) Remanufactured Device and the 2001 edition of NCWM Pub 14 Administrative Policy Section M and the Checklist for Liquid-Measuring Devices Section K. Policy on Remanufactured and Repaired Devices specify that if a company or individual repairs or remanufactures a device, they are obligated to repair or remanufacture the device consistent with the manufacturer's original design. Otherwise, that specific device is no longer traceable to the NTEP CC.

III-2-M Handbook 130, Uniform National Type Evaluation Regulation Section 4. Prohibited Acts and Exemptions (9) Repaired Device and (10) Remanufactured Device and the 2001 edition of Pub 14 Administrative Policy Section J.2 Re-evaluation to Expand an Existing Certificate of Conformance. A type with a valid CC may be re-evaluated in order to encompass additional features such as expanding the kinds of commodities that may be measured. See also Publication 14 Administrative Policy Section M. Policy on Remanufactured and Repaired Devices, and Section K. Evaluation of New Technology.

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

Code Section	Nonretroactive paragraph	Effective Date	Subject	Comment
1.10	G-S.1.(b)(1)	2003	Identification - Model Identifier	Abbreviations for Model
1.10	G-S.1.(c)	1968	Serial number	Required
1.10	G-S.1.(c)(1)	1986	Serial number	Identified with words, symbols, etc.
1.10	G-S.1.(c)(2)	2001	Serial number	Acceptable abbreviations
1.10	G-S.1.(d)	2004	Software version	Must be identified
1.10	G-S.1.(d)(1)	2007	Software version	Identified with words, symbols, etc.
1.10	G-S.1.(d)(2)	2007	Software version	Acceptable abbreviations
1.10	G-S.1.(e)	2003	CC number	Identified with words, symbols, acceptable abbreviations, etc.
1.10	G-S.1.1.	2004	Locations of markings	Applicable to not-built-for-purpose devices
1.10	G-S.1.2.	2002	Remanufactured devices and elements	Markings
1.10	G-S.5.2.2.(d)	1986	Digital zero indications	Minimum zero indications
1.10	G-S.6.	1977	Operational control indications, etc.	Markings
1.10	G-S.8.	1990	Sealing electronic adjustable components	
1.10	G-S.8.1.	2010	Sealing multiple elements	
2.20	S.1.1.1.(b)	1993	Center of zero requirements	
2.20	S.1.2.	1986	Value of d	
2.20	S.1.2.1.	1989	Digital indicating scales single unit of measure	
2.20	S.1.4.3.	2002	Width of index for graduations	
2.20	S.1.7.(b)	1993	Capacity indication	Max 9d above capacity
2.20	S.1.8.3.1.	2001	Weight classifiers-sealing and indications	Applicable to weight classifiers and normal rounding scales capable of weight classifying
2.20	S.1.8.4. (a)(b) footnote	2006	# symbol	Prohibited
2.20	S.1.11.(a)	1979	Sealing	
2.20	S.1.11.(b)	1990	Sealing	Recognizes audit trail
2.20	S.1.11.(c)	1995	Sealing	Table S.1.11. format for audit trails
2.20	S.1.1.11. (table)	1995	Audit trail format	
2.20	S.1.12.	1993	Manual weights	Requirements and abbreviations for manual weights
2.20	S.1.12.	1995	Manual weights	Net weights permitted
2.20	S.2.1.3.	???	Automatic zero-tracking	Mfg. before and after dates in lieu of nonretroactive dates (applicable to remanufactured devices?)

Code Section	Nonretroactive paragraph	Effective Date	Subject	Comment
2.20	S.2.1.3.3.	2001	Means to disable AZT	
2.20	S.2.1.5.(c)	2009	IZSM	Requirements and limits for IZSM on separable indicating elements
2.20	S.2.2.2.	1989	Equal arm scales	Balance indicator requirements
2.20	S.2.3.	1983	Tare	Nonretroactive requirements for clearing of tare and for MI & MR scales.
2.20	S.2.4.	1986	Level-indicating means	**Retroactive exemption** for jewelers, prescription, and dairy test scales including Class I and II scales.
2.20	S.5.1.	1986	Accuracy Class Markings	
2.20	S.5.2.	1986	Parameters for Accuracy Classes	
2.20	S.5.4.	1994	Relationship of v and e	Suitability of load cell vmin
2.20	Table 3	1986	Parameters for Accuracy Classes	Table
2.20	S.6.1.	1989	CLC marking requirements	
2.20	S.6.4.	2002	RR track scale section capacity	Limitations of capacity of 2-section and more that 2-section scales
2.20	S.6.5.	2003	Livestock scales	Limitations of capacity of 2-section and more that 2-section scales
2.20	S.6.3.(b)1	2003	Model designation	Allowable prefixes
2.20	S.6.3.(b)2	1968	Serial number	Required
2.20	S.6.3.(b)2	1986	Serial number	Allowable prefixes
2.20	S.6.3.(b)3	1983	Nominal Capacity	Nonretroactive requirement for value of the scale division
2.20	S.6.3.(b)4	1986	d and e	Markings
2.20	S.6.3.(b)5	1986	Temperature ranges	Marking if required
2.20	S.6.3.(b)6	1988	nmax for load cells	Includes acceptable abbreviation.
2.20	S.6.3.(b)7	1988	Single and Multiple load cell	Markings
2.20	S.6.3.(b)8	1988	Separable indicating element	Marking Included III/III L
2.20	S.6.3.(b)9	1989	CLC marking requirements	Includes modified scales
2.20	S.6.3.(b)11	1991	Load cell markings	Permits accompanying document
2.20	S.6.3.(b)12	1989	CLC marking requirements	Acceptable abbreviation
2.20	S.6.3.(b)13	1986	Marking for special application	In additions to existing **retroactive** counting feature requirements
2.20	S.6.3.(b)14	2003	CLC marking requirements	Added for livestock scales that also weigh vehicles
2.20	S.6.3.(b)15	1988	Loading direction for load cells	Markings
2.20	S.6.3.(b)16	1986	Serial number markings	Includes prefix
2.20	S.6.3.(b)17	1986	Accuracy class marking requirements	
2.20	S.6.3.(b)18 (e)	1989	Included load-receiving elements	Nominal capacity marking
2.20	S.6.3.(b)19	1988	nmax, vmin, accuracy class markings	Applicable to separable weighing-load-receiving elements

Code Section	Nonretroactive paragraph	Effective Date	Subject	Comment
2.20	S.6.3.(b)20	2000	CLC requirements for combination RRtrack/Vehicle scales	Markings
2.20	S.6.3.(b)21	2001	vmin in terms of mass	
2.20	S.6.3.(b)22	2003	CLC and section capacity markings	Applicable to combination RR track and vehicle scales
2.20	S.6.3.(b)23	2001	CC marking requirement	refers to G-S.1.(e)
2.20	S.6.3.(b)24	2005	Acceptable abbreviations for "Section Capacity."	
2.20	N.1.5.	1986	Discrimination test	
2.20	N.1.4.2.	1991?	CIM railroad weighing systems < ten cars	"In-service before" in lieu of nonretroactive dates (applicable of remanufactured devices?)
2.20	N.1.4.3.	1991?	CIM railroad weighing systems < ten cars	"In-service after" in lieu of nonretroactive dates (applicable of remanufactured devices?)
2.20	T.N.1.	1986	Tolerance for marked scales	Applicable to remanufactures scales (e.g., T.N.4.5., T.N.4.6., T.N.4.7., T.N.7., T.N.8.,)
2.20	UR.1.3.	1986	Value of scale division	Recorded value same as indicated value.
2.20	UR.1.5.	1996	RR track scale printer requirement.	
2.20	UR.2.6.1.	1976	Approaches	
3.30	S.1.5.3.(a)	2002	Width of index for graduations	
3.30	S.1.6.1.	2006	Indications of delivery for electronic devices	Quantity and total price inhibited until fueling conditions reached.
3.30	S.1.6.2.	1983	Power loss provisions	Transaction and user information retention requirements
3.30	S.1.6.4.1.(b)	1991	Display of Unit Prices	Selected UP displayed prior to delivery with exceptions (e.g., fleet, contract, and truck refueling sales).
3.30	S.1.6.5.(a)	1991	Money-Value computations	Device shall compute (and display?) all possible sales within range of measurement or computing elements (i.e., with exceptions to fleet, contract, truck-stop dispensers)
3.30	S.1.6.5.3.	1985	Auxiliary element money indications	Agreement requirements with primary indications
3.30	S.1.6.5.4.	1991	Selection on unit price	Requires selection of UP prior to delivery using device or other customer activated controls with exceptions (e.g., fleet, contract, and truck refueling sales).
3.30	S.1.6.5.5.	1994	Retention of quantity and total price	Indications on the face of the dispenser retained for a minimum of 5-minutes or until new transaction initiated. Exception for aviation refueling.
3.30	S.1.6.5.6.(a)	2008	Quantity and total price - Aviation refueling	Quantity displayed through the transaction.
3.30	S.1.6.5.6.(b)	2008	Total price display	Conditions for displaying total price

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

Appendix C – Correspondences

S&T Agenda Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) - Letter from PMP

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

PMP CORPORATION
Petroleum Meter & Pump

May 4, 2010

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

Dear Steve,

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

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

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

A good example of this would be if a Tokheim 1200 series dispenser was removed from the island and remanufactured. Let say the dispenser was disassembled checked for wear and a new mechanical computer and new outer skins were installed. The dispenser was checked for accuracy and everything checked out per handbook 44. Because this dispenser was out of production prior to the adding of the nonretroactive marking requirement specifying that the CC number be clearly marked on the dispenser, it could be rejected by a state and not allowed to be installed. These dispensers are very accurate, and proven to be very reliable and especially suitable for low volume retail outlets in rural areas. There is a vast difference in the cost per gallon

S&T Agenda Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) - Letter from PMP

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

for equipment that is passed on to the consumer from a retail location that sells 250,000 gallons per month verses the location that sells 30,000 gallons per month. The same issues apply to scales such as a deli scale that is removed from one grocery store location to the stores shop where it is rebuild and move to another grocery store.

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

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

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

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

Sincerely,

Thomas McGee
President

S&T Agenda Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) - Stakeholders Letter from Graffco

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

July 2, 2010

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

Ms. Butcher:

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

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

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

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

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

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

Sincerely,

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Letter from Remanufacturing Stakeholders July 2, 2010
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Letter from Remanufacturing Stakeholders July 2, 2010
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Letter from Remanufacturing Stakeholders July 2, 2010
Page 4

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S&T Agenda Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) - Letter from Dresser Wayne

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

DRESSER Wayne

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

ATTN: Specifications and Tolerances Committee

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

Dear Mr. Saum and the Specifications and Tolerances Committee:

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

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

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

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

S&T Agenda Item 310-3: Nonretroactive Requirements (Remanufactured Equipment) - Letter from Dresser Wayne

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

- **Payment security**. Higher fuel prices and sophisticated identity-theft schemes both have exposed dispensing equipment to increasing threats of fraud - manifested by the theft of fuel as well as customers' personal and financial data. As such, the credit card industry has mandated increasingly rigorous payment-security standards, and dispenser manufacturers have enhanced fuel-meter technology and associated electronics to deter tampering with measurement and calibration.

- **Fuel evolution.** The last few years have brought unprecedented changes in the country's fuel supply based on national energy policy and environmental initiatives. The introduction of ultra-low-sulfur diesel (ULSD) and diesel exhaust fluid (DEF) have taxed the capabilities of dispensers' hydraulic systems. In addition, higher levels of ethanol in today's fuels require specially fabricated seals and components. Manufacturers must adapt quickly and skillfully to these changes, not only to meet environmental standards, but also to maintain the integrity of the metrological function.

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

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

Sincerely,



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

Dresser Wayne Dresser. Inc.
3&14 Jarrett Way, Austin, 1X 7S72&
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S&T Agenda Item 321-1: Belt-Conveyor Scale Systems - Letter from Thermo Fisher Scientific

Thermo Fisher
SCIENTIFIC

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www.thermoscientific.com/bulkhandling

7-18-2011

TO: NCWM S&T Committee
REF: Key Number 321-1

A polling of the full membership of the USNWG on Belt-Conveyor Scales took place beginning on 9/30/2010 in order to determine the level of support within the entire WG for the draft proposal of the amendments to N.3.1.3. The members of the WG were contacted by email and asked to review and provide a yes/no vote of the proposal as shown.

> N.3.1.3. Check for Consistency of the Conveyor Belt Along Its Entire Length. — During a zero-load test with flow rate filtering disabled, the total change indicated in the totalizer during one revolution of the belt shall not exceed 0.12% of the minimum test load for the system as defined in paragraph N.2.3. Minimum Test Load. The end value of the zero-load test must meet the ± 0.06 % requirement of paragraph N.3.1.2. Test for Zero Stability. (Added 2002) (Amended 2004 and 201X)

Every respondent to the balloting indicated his/her support for the draft proposal.

> N.3.1.3. Check for Consistency of the Conveyor Belt Along Its Entire Length. — During a zero-load test with all operational fie low-flow lockout disabled, the total change indicated in the totalizer during one revolution of the belt any complete revolution of the belt shall not exceed an absolute value of 0.12% of the minimum test load.
>
> *Note: The end value of the zero-load test must meet the ± 0.06 % requirement: Test for Zero Stability. (Added 2002) (Amended 2004 and 201X)

A final review of the proposal resulted in one change to reduce the ambiguity of the allowable range. This change was proposed by a scale manufacturer (CST). distributed to the USNWG, and all members of the work group who responded were in favor of the suggested wording changes. The final proposal requested to be adopted by the NCWM is:

> N.3.1.3. Check for Consistency of the Conveyor Belt Along Its Entire Length. — During a zero-load test with all operational no low-flow lockout disabled, the absolute value of the difference between the maximum and minimum totalizer readings indicated on the totalizer during any complete revolution of the belt shall not exceed 0.12% of the minimum test load.

*Note: The end value of the zeroload test must meet the ± 0.06 % requirement:
Test for Zero Stability. (Added 2002) (Amended 2004 and 201X)

Bill Ripka



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

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

ThermoFisher SCIENTIFIC

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

20 June 2010

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

The existing wording in HB-44 is:

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

The current proposal (321-1) reads:

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

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

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

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

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

- **a. Flow rate filtering and no flow cut-off shall be disabled.**
- **b. The belt shall be marked in order to verify one complete revolution.**
- **c. Run the empty belt.**
- **d. The total variance in weight accumulation during one complete revolution of the belt shall not exceed *x*% (tbd) of the load delivered when operated at maximum capacity for one revolution of the belt.**

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

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

(example: If the capacity is 2500 TPH and 1 belt revolution takes = 260 seconds, the load delivered in one revolution at maximum capacity = 180.55 Tons. The total variance of < 0.12% (total +/- accumulation) cannot exceed 0.216 tons.)

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

Respectfully submitted,

Bill Ripka – sub-committee lead

Sub-Committee Members:
Peter Sirrico – Thayer Scale
Phil Carpentier – PTC Consulting
Al Page – independent
James Hale – Southern Company Services
John Barton – NIST
Rick Harshman – NIST
Jim Dietrich – Kaskaskia Valley Scale

S&T Agenda Item 342-1: Data from Federal Milk Marketers Administration

Mass Flow Meter Study Summary

The Northeast Market Administrator upgraded one of the bulk milk tank calibration units in early 2008 with a mass flow meter made by Micro Motion. The mass flow meter system was studied for accuracy, repeatability and effects of water temperature during August, September and November of 2008 and March through July of 2009.

There were 56 bulk tank calibrations performed during the study period with bulk tanks larger than 500 gallons. The meter was checked 228 times by metering 50 gallons into a certified Determine-Brownie prover can which was certified by the New York State Metrology Laboratory in Albany, NY.

During each bulk milk tank calibration, the meter was checked at the start and after completion. The meter was also checked (re-verified) during the interim if the tank was larger than 500 gallons. There were 116 interim meter checks performed. Only during one of these meter checks did the reading prove to exceed the allowable tolerance of +/-6 cubic inches. The other 115 meter checks proved to be within the allowable tolerance. It should be noted that the one meter check that was out of tolerance read +7 cubic inches.

The mass flow metering system has proven to be very accurate, has excellent repeatability, and is very reliable. The data is attached. A brief description of each column follows:

Date-The day the calibration was performed

Tank check/calibration-service provided at that time. A calibration check is a much quicker procedure usually checking at 4-5 levels throughout the producer's production range. A calibration establishes approximately 60 levels throughout the tank and converts gallons to pounds. A conversion chart is create and left for measuring milk by the producer and milk hauler.

(Prover) Cu/Inches Start- this is the scale reading from the certified 50 gallon prover can in cubic inches after the meter delivered 50 gallons into the prover. This column includes start and interim meter checks.

(Display) Meter Reading-reading on the display after the meter delivered 50 gallons into the prover can.

(Prover) Cu/Inches Finish- this is the scale reading from the certified 50 gallon prover can in cubic inches after the meter delivered 50 gallons into the prover. This column is used for readings after the tank calibration is completed.

Water Temp (F)-this is the temperature of the water being used when the meter was checked.

Delivery Size- amount (in gallons) used to check the meter system. For example, if there is a 10 in the column, it means that five deliveries of 10 gallon each were used to fill the prover.

Comments-in many cases, the operator included the gallons in the bulk tank when the interim meter checks were being performed. Also, notes about meter system adjustments are included. A note was usually included when adding water to the unit during a calibration to study temperature affects on the metering system.

We have continued to monitor both of our calibration units performance and record all meter checks during tank checks and calibrations. However, the data is not summarized in the above.

Richard Koeberle

Marketing Specialist
Federal Milk Market Administrator
Northeast Marketing Area-Order 1
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S&T Agenda Item 342-1: Data from Federal Milk Marketers Administration

Rkoeberle@fedmilk1.com

August-SLH							
Date	Tank Check/ Calibration	Meter Error (Prover) Cu/Inches Start	(Display) Meter Reading	Final draft (Prover) Cu/Inches Finish	(Display) Meter Reading	Water Temp (F)	Comments
8/1/08	check	1	50.00	3	50.00		
8/1/08	calibration	2	49.99				Start (wet down)
"	"	-1	49.99				500 gallons
"	"			-1	49.99		End (1000 gal tank)
8/4/08	check	1	50.00	1	49.99		
8/4/08	check	3	50.00	5	50.01		
8/4/08	check	3	50.00	4	50.00		
8/5/08	check	2	50.00	3	50.00		
8/5/08	check	8	50.01	6	50.00		very steep grade
8/5/08	check	6	50.00	3	49.99		
8/6/08	check	3	50.00	1	50.00		adjusted @ start
8/6/08	check	4	50.00	2	50.00		
8/6/08	calibration	3	50.00				start
"	"	0	50.00				500 gallons
"	"	0	50.00				1000 gallons
"	"	1	49.99				1500 gallons
"	"			-1	50.00		end
8/6/08	check	0	50.00	-2	49.99		
8/7/08	check	-1	50.00	2	50.00		
8/7/08	check	2	50.01	1	50.00		
8/8/08	calibration	0	50.00				adjusted @ start
"	"	2	50.00				500 gallons
"	"	-1	49.99				1000 gallons
"	"	-1	49.99				1500 gallons
"	"			4	50.00		end
8/11/08	check	2	50.00	0	49.99		
8/11/08	check	-1	50.00	0	50.00		
8/11/08	calibration	3	50.00				start
"	"	-2	49.99				500 gallons
"	"			-2	50.00		end
8/11/08	check	3	50.00	2	50.00		
8/12/08	check	3	50.00	2	50.00		
8/12/08	check	3	50.00	2	50.00		
8/13/08	check	3	50.00	4	50.00		
8/13/08	check	5	50.01	4	50.00		
8/13/08	check	4	50.00	6	50.01		
8/14/08	check	6	50.00	5	49.99		
8/14/08	check	4	50.00	4	49.99		
8/14/08	check	7	50.00	7	50.00		
8/15/08	check	6	50.00	7	50.00		

August-SLH							
Date	Tank Check/ Calibration	Meter Error (Prover) Cu/Inches Start	(Display) Meter Reading	Final draft (Prover) Cu/Inches Finish	(Display) Meter Reading	Water Temp (F)	Comments
8/15/08	check	6	50.00	7	50.00		
8/15/08	check	7	50.00	6	50.00		
8/25/08	check	1	50.00	3	50.00		adjusted @ start
8/25/08	calibration	1	50.00	-1	50.00		adjusted @ start
8/26/08	check	-4	50.00	-4	50.00		
8/26/08	check	-3	50.00	-4	50.00		
8/26/08	calibration	2	50.00				adjusted @ start
"	"	2	50.01				500 gallons
"	"			5	50.00		end
Con't							
8/28/08	check	-2	50.00	0	50.01		
8/28/08	calibration	0	50.00				start
"	"	3	50.01				500 gallons
"	"	2	50.00				1000 gallons
"	"			1	50.00		end
8/29/08	calibration	-3	49.99				start
"	"	3	50.00				750 gallons (adj)
"	"	1	49.99				1500 gallons
"	"	5	50.00				2200 gallons
"	"			2	50.01		end

September-DAA							
Date	Tank check/ calibration	(Prover) Cu/Inches Start	(Display) Meter Reading	(Prover) Cu/Inches Finish	(Display) Meter Reading	Water Temp (F)	Comments
9/2/08	check	3		-1			
9/3/08	check	2		1	50.00		
9/3/08	check	2	50.00	2	49.99		
9/3/08	calibration	3	50.00				start
"	"	2	49.99				500 gallons
"	"	2	49.99				1000 gallons
"	"	0	50.00				1500 gallons
"	"			0	50.00		end
9/4/08	check	3	50.00	2	49.99		
9/4/08	check	1	50.00	2	50.01		
9/4/08	check	4	50.00	5	50.01	73.7	
9/4/08	check	1	50.01	2	50.00	74.6	adjusted @start
9/5/08	check	2	50.01	1	50.00	75.2	
9/5/08	check	1	50.00	2	50.00	75.2	
9/5/08	check	0	50.01	1	50.01	76.2	
9/5/08	check	2	49.99	2	50.00	77.4	
9/8/08	check	0	50.00	1	50.00	77.4	

September-DAA							
Date	**Tank check/ calibration**	**(Prover) Cu/Inches Start**	**(Display) Meter Reading**	**(Prover) Cu/Inches Finish**	**(Display) Meter Reading**	**Water Temp (F)**	**Comments**
9/8/08	check	-1	49.99	1	50.00	76.8	
9/8/08	calibration	1	50.00			76.8	start
"	"	0	50.00			76.8	500 gallons
"	"	1	50.00			76.8	1000 gallons
"	"			-1	49.99	76.8	end
9/9/08	check	3	50.00	2	49.99	77.6	
9/9/08	check	0	50.00	-1	49.99	78.0	
9/9/08	check	3	50.00	2	50.00	78.1	
9/10/08	check	2	50.00	1	50.00	78.6	
9/10/08	check	1	49.99	1	50.00	78.7	
9/10/08	check	1	49.99	1	49.99	78.8	
9/11/08	check	3	49.99	2	50.00	78.3	
9/11/08	check	2	49.99	3	50.00	78.3	
9/11/08	check	4	50.01	3	50.00	79.2	
9/11/08	check	4	50.01	3	50.00	79.1	
9/12/08	check	3	50.00	3	50.00	78.4	
9/12/08	check	3	50.00	3	50.00	78.1	
9/15/08	check	4	50.01	3	50.00	80.7	
9/15/08	check	3	50.00	3	50.00	79.5	
9/15/08	check	5	50.00	4	50.00	80.5	
9/15/08	check	5	50.00	5	50.00	80.0	
9/16/08	check	4	49.99	5	50.00	79.6	
9/16/08	check	5	50.00	4	49.99	79.8	
9/16/08	check	4	50.00	3	50.00	80.4	(2 tanks
9/16/08	check	3	50.00	4	50.00	80.4	same farm)
9/16/08	check	5	50.01	4	50.00	80.5	(2 tanks
9/16/08	check	4	50.00	3	49.99	80.5	same farm)
9/17/08	calibration	5	50.01			79.6	start
"	"	-2	49.99			74.4	1800 gallons
"	"	-1	49.99			72.9	3550 gallons
"	"	-2	50.00			71.0	5300 gallons
"	"			-1	50.01	71.0	7220 gallons (end)
9/18/08	check	-2	50.01	-1	50.00	73.1	
9/18/08	check	3	50.02	2	50.00	73.6	
9/18/08	check	3	50.00	3	50.00	73.2	
9/18/08	check	2	50.00	3	50.00	73.5	
9/19/08	check	0	50.00	1	50.00	74.2	
9/19/08	check	-2	50.00	-2	50.00	74.6	
9/19/08	check	0	50.01	-1	50.00	74.3	
9/22/08	check	1	50.00	0	49.99	73.4	
9/22/08	check	0	50.00	1	50.00	74.1	
9/22/08	check	-1	50.00	0	50.00	74.6	
9/22/08	check	1	50.00	2	50.01	75.2	

September-DAA							
Date	Tank check/ calibration	(Prover) Cu/Inches Start	(Display) Meter Reading	(Prover) Cu/Inches Finish	(Display) Meter Reading	Water Temp (F)	Comments
9/23/08	check	-2	50.00	-1	50.00	74.6	
9/23/08	check	0	50.00	-1	49.99	75.1	
9/23/08	check	-1	50.00	0	50.00	75.5	
9/23/08	check	0	50.00	-2	49.99	75.7	
9/23/08	check	2	50.01	2	50.00	75.9	
9/24/08	check	0	50.00	1	50.00	74.4	
9/24/08	check	1	50.00	2	50.00	75.5	
9/24/08	check	1	50.00	3	50.00	77.6	
9/25/08	check	1	50.00	2	50.01	76.6	
9/29/08	check	3	50.00	3	50.00	75.4	
9/29/08	check	2	50.00	3	50.01	75.7	
9/30/08	check	3	50.00	2	50.00	74.8	
9/30/08	check	-2	49.99	-1	50.00	74.6	
9/30/08	check	-1	50.00	-1	50	74.5	

Temperature Correction Data

	Temp in °C	Gallon pounds	Gallon grams	Cubic inch at 5°C	50 Gal Cubic Inch	Expected Correction	cu in per liter			
							61.02374	Steel Expansion		
32.0	0	8.33467	3780.543	230.7360	11536.8	-0.012		0.00004608	21701.39	
33.8	1	8.33518	3780.781	230.7361	11536.8	-0.009			-0.00069	0.00038
35.6	2	8.33556	3780.953	230.7361	11536.81	-0.007			-0.00031	0.00024
37.4	3	8.33580	3781.060	230.7362	11536.81	-0.005			-0.00007	0.00010
39.2	4	8.33590	3781.105	230.7362	11536.81	-0.002			0.00003	-0.00003
41.0	5	8.33587	3781.090	230.7363	11536.81	0.000			0.00000	-0.00017
42.8	6	8.33570	3781.015	230.7363	11536.82	0.002			-0.00017	-0.00029
44.6	7	8.33541	3780.884	230.7364	11536.82	0.005			-0.00046	-0.00041
46.4	8	8.33500	3780.698	230.7364	11536.82	0.007			-0.00087	-0.00053
48.2	9	8.33447	3780.458	230.7365	11536.82	0.009			-0.00140	-0.00064
50.0	10	8.33383	3780.167	230.7365	11536.82	0.012			-0.00204	-0.00076
51.8	11	8.33307	3779.821	230.7365	11536.83	0.014			-0.00280	-0.00087
53.6	12	8.33220	3779.426	230.7366	11536.83	0.016			-0.00367	-0.00098
55.4	13	8.33122	3778.983	230.7366	11536.83	0.018			-0.00465	-0.00108
57.2	14	8.33014	3778.495	230.7367	11536.83	0.021			-0.00573	-0.00117
59.0	15	8.32897	3777.962	230.7367	11536.84	0.023			-0.00690	-0.00127
60.8	16	8.32770	3777.415	230.7368	11536.84	0.025			-0.00817	-0.00137
62.6	17	8.32633	3776.764	230.7368	11536.84	0.028			-0.00954	-0.00146
64.4	18	8.32487	3776.103	230.7369	11536.84	0.030			-0.01100	-0.00155
66.2	19	8.32332	3775.398	230.7369	11536.85	0.032			-0.01255	-0.00165

68.0	20	8.32167	3774.653	230.7370	11536.85	0.035			-0.01420	-0.00173
69.8	21	8.31994	3773.868	230.7370	11536.85	0.037			-0.01593	-0.00181
71.6	22	8.31813	3773.044	230.7371	11536.85	0.039			-0.01774	-0.00191
73.4	23	8.31622	3772.180	230.7371	11536.85	0.041			-0.01965	-0.00198
75.2	24	8.31424	3771.279	230.7371	11536.86	0.044			-0.02163	-0.00207
77.0	25	8.31217	3770.340	230.7372	11536.86	0.046			-0.02370	

Mass Flow Meter Calibration Data					
Date	**Time**	**Temp °F**	**Meter Gal**	**Prover Gal**	**Diff in cc**
4/2/2007		53.80	50.00	49.99	(0.01)
4/2/2007	13:00	54.00	49.99	49.97	(0.02)
4/2/2007	13:30	54.10	50.00	49.98	(0.02)
4/2/2007	15:00	54.30	50.00	49.99	(0.01)
4/2/2007	15:40	54.60	50.00	49.99	(0.01)
4/2/2007	16:15	54.80	50.00	49.99	(0.01)
4/3/2007	12:30	55.00	50.00	49.99	(0.01)
4/3/2007	13:15	55.50	50.00	49.97	(0.03)
4/3/2007	13:30	55.70	49.99	49.96	(0.03)
4/3/2007	15:30	56.10	49.99	49.99	0.00
4/3/2007	16:00	56.40	50.00	50.00	0.00
4/3/2007	16:00	56.40	50.00	50.00	0.00
4/3/2007	16:40	56.60	50.01	50.00	(0.01)
4/3/2007	17:05	56.80	50.00	49.99	(0.01)
4/4/2007	10:25	55.80	50.00	50.00	0.00
4/4/2007	11:05	55.40	50.01	50.03	0.02
4/4/2007	11:30	55.30	50.00	50.02	0.02
4/4/2007	12:45	55.00	50.01	50.00	(0.01)
4/4/2007	13:25	55.10	50.01	50.00	(0.01)
4/4/2007	14:00	55.10	50.01	50.00	(0.01)
4/5/2007	12:30	53.00	49.99	49.99	0.00
4/5/2007	13:10	52.90	50.00	50.01	0.01
4/5/2007	13:35	52.90	50.01	50.01	0.00
4/5/2007	14:00	52.70	50.00	50.01	0.01
4/5/2007	14:40	52.20	50.01	50.03	0.02
4/6/2007	9:15	53.40	50.00	50.00	0.00
4/6/2007	10:15	52.70	49.99	50.02	0.03
4/6/2007	10:55	52.50	50.00	50.01	0.01
4/6/2007	11:35	52.40	50.01	50.02	0.01
4/6/2007	12:00	52.40	50.00	50.00	0.00

Mass Flow Meter Calibration Data					
Date	**Time**	**Temp °F**	**Meter Gal**	**Prover Gal**	**Diff in cc**
4/9/2007	15:15	53.40	50.01	50.00	(0.01)
4/9/2007	15:55	52.80	49.99	50.02	0.03
4/9/2007	16:25	52.40	50.00	50.01	0.01
4/9/2007	18:30	52.60	50.00	50.00	0.00
4/9/2007	19:00	52.60	50.02	50.01	(0.01)
4/9/2007	19:35	52.50	50.00	50.00	0.00
4/10/2007	9:50	52.90	49.99	49.99	0.00
4/10/2007	10:40	52.40	50.00	50.02	0.02
4/10/2007	11:05	52.40	50.01	50.01	0.00
4/10/2007	12:55	52.20	50.00	50.00	0.00
4/10/2007	13:30	52.00	50.00	50.00	0.00
4/10/2007	13:55	52.10	50.00	50.00	0.00
4/11/2007	9:15	51.20	50.00	50.00	0.00
4/11/2007	10:05	51.40	50.00	50.00	0.00
4/11/2007	10:35	51.40	50.00	50.00	0.00
4/11/2007	11:00	51.40	50.00	49.99	(0.01)
4/11/2007	11:45	51.60	49.99	49.97	(0.02)
4/12/2007	8:35	51.20	50.00	50.00	0.00
4/12/2007	9:15	51.40	49.99	49.98	(0.01)
4/12/2007	10:05	51.10	50.00	49.99	(0.01)
4/12/2007	10:35	51.30	50.00	49.98	(0.02)
4/12/2007	9:36	51.40	50.00	49.97	(0.03)
4/12/2007	11:55	51.50	50.00	50.01	0.01
4/12/2007	12:40	51.30	50.00	50.01	0.01
4/12/2007	1:10	51.40	50.00	50.01	0.01
4/15/2007	10:05	47.70	49.99	49.99	0.00
4/15/2007	11:30	47.80	49.99	49.98	(0.01)
4/15/2007	12:15	47.80	50.00	49.99	(0.01)
4/16/2007	1:10	47.70	50.00	50.00	0.00
4/16/2007	2:00	47.80	50.00	50.00	0.00
4/17/2007	10:20	47.00	50.00	50.00	0.00
4/17/2007	11:00	47.30	49.99	49.98	(0.01)
4/17/2007	12:15	47.30	50.00	50.00	0.00
4/17/2007	1:10	47.50	50.00	50.00	0.00
4/17/2007	1:50	47.50	50.01	50.00	(0.01)
4/24/2007	8:50	56.90	50.00	50.00	0.00
4/24/2007	9:30	56.90	50.01	50.01	0.00
4/24/2007	10:05	56.90	50.00	50.02	0.02

Mass Flow Meter Calibration Data					
Date	**Time**	**Temp °F**	**Meter Gal**	**Prover Gal**	**Diff in cc**
4/24/2007	10:25	57.00	50.00	50.01	0.01
4/24/2007	11:00	57.10	50.00	50.00	0.00
4/24/2007	1:15	57.50	50.00	50.01	0.01
4/24/2007	1:50	57.90	50.01	49.99	(0.02)
4/24/2007	2:25	58.20	50.01	49.99	(0.02)
4/25/2007	10:30	58.30	50.00	50.01	0.01
4/25/2007	11:10	58.40	50.00	50.00	0.00
4/25/2007	11:35	58.50	50.00	50.00	0.00
4/25/2007	1:20	58.50	49.99	49.99	0.00
4/25/2007	2:05	58.50	50.00	50.00	0.00
4/25/2007	2:45	58.40	50.00	50.01	0.01
4/25/2007	4:30	58.40	50.00	50.00	0.00
4/25/2007	5:05	58.60	50.00	49.98	(0.02)
4/25/2007	5:40	58.80	50.00	49.97	(0.03)
4/26/2007	10:45	57.80	50.00	50.00	0.00
4/26/2007	11:45	58.00	50.00	49.98	(0.02)
4/26/2007	12:35	58.00	50.00	49.98	(0.02)
4/26/2007	2:55	58.20	50.00	50.00	0.00
4/26/2007	3:40	58.40	50.00	49.98	(0.02)
4/26/2007	4:15	58.40	50.00	49.98	(0.02)
4/26/2007	7:50	58.30	50.00	49.99	(0.01)
4/26/2007	8:25	58.50	50.00	50.00	0.00
4/26/2007	8:50	58.60	50.01	50.00	(0.01)
4/26/2007	9:50	58.50	50.00	50.01	0.01
4/26/2007	10:50	58.50	50.00	50.00	0.00
5/2/2007	10:20	55.90	50.00	50.00	0.00
5/2/2007	11:20	56.10	50.00	49.99	(0.01)
5/2/2007	12:00	56.10	49.99	49.98	(0.01)
5/2/2007	12:40	56.20	49.99	49.98	(0.01)
5/2/2007	13:15	56.60	50.00	49.99	(0.01)
5/2/2007	13:40	56.60	50.00	49.99	(0.01)
5/2/2007	13:45	56.60	50.00	49.99	(0.01)
5/2/2007	14:15	57.00	49.99	49.97	(0.02)
5/3/2007	6:30	56.70	50.00	50.00	0.00
5/3/2007	7:45	56.70	50.00	50.00	0.00
5/3/2007	12:00	56.80	50.00	50.00	0.00
5/3/2007	12:40	57.30	50.00	49.99	(0.01)
5/3/2007	13:10	57.30	50.00	50.00	0.00

Mass Flow Meter Calibration Data					
Date	**Time**	**Temp °F**	**Meter Gal**	**Prover Gal**	**Diff in cc**
5/7/2007	11:30	59.30	50.00	50.01	0.01
5/7/2007	12:05	59.60	50.00	50.01	0.01
5/7/2007	12:30	59.70	50.00	50.00	0.00
5/7/2007	12:55	59.80	50.00	50.00	0.00
5/7/2007	13:30	60.00	49.99	49.97	(0.02)
5/8/2007	7:40	60.20	50.00	50.01	0.01
5/8/2007	8:30	60.20	50.00	50.00	0.00
5/8/2007	9:05	60.40	50.00	50.00	0.00
5/8/2007	9:35	60.50	50.01	49.99	(0.02)
5/8/2007	12:15	61.00	50.00	49.99	(0.01)
5/8/2007	12:55	61.20	50.00	49.99	(0.01)
5/8/2007	13:40	61.30	50.00	49.99	(0.01)
5/9/2007	8:40	60.20	50.00	50.00	0.00
5/9/2007	9:40	60.30	50.00	49.99	(0.01)
5/9/2007	10:10	60.50	50.01	50.00	(0.01)
5/9/2007	10:50	60.70	50.00	50.00	0.00
5/9/2007	11:55	61.10	50.00	50.00	0.00
5/10/2007	9:15	61.90	50.01	50.00	(0.01)
5/10/2007	9:55	62.00	50.00	50.00	0.00
5/10/2007	10:25	62.30	50.00	49.99	(0.01)
5/10/2007	11:50	62.30	50.00	50.00	0.00
5/10/2007	13:30	62.70	50.01	50.00	(0.01)
5/10/2007	13:10	62.90	50.00	49.98	(0.02)
5/14/2007	9:50	63.20	50.00	50.01	0.01
5/14/2007	10:40	63.30	50.00	49.99	(0.01)
5/14/2007	11:20	63.60	50.00	49.98	(0.02)
5/14/2007	12:30	63.70	50.00	50.01	0.01
5/14/2007	13:30	63.80	50.00	49.98	(0.02)
5/15/2007	12:00	64.20	50.00	50.00	0.00
5/15/2007	13:50	64.50	49.99	49.98	(0.01)
5/15/2007	16:10	65.20	50.00	50.00	0.00
5/15/2007	16:40	65.30	50.00	49.99	(0.01)
5/15/2007	17:10	65.70	50.00	49.99	(0.01)
5/15/2007	17:30	65.70	49.99	49.98	(0.01)
5/16/2007	9:10	65.40	50.00	50.02	0.02
5/16/2007	9:50	65.40	50.00	50.01	0.01
5/16/2007	10:20	65.40	50.00	50.00	0.00
5/16/2007	10:45	65.40	50.00	50.00	0.00

Mass Flow Meter Calibration Data					
Date	**Time**	**Temp °F**	**Meter Gal**	**Prover Gal**	**Diff in cc**
5/16/2007	11:25	65.40	50.00	50.00	0.00
6/4/2007	10:45	71.20	50.00	50.01	0.01
	11:30	71.40	50.00	50.03	0.03
	12:05	71.80	50.00	50.02	0.02
	12:40	72.30	50.00	50.02	0.02
	1:20	72.80	50.00	50.01	0.01
6/5/2007	9:50	71.80	50.00	50.00	0.00
	11:30	71.20	50.00	50.00	0.00
	1:15	71.60	50.00	50.00	0.00
	2:00	71.60	50.00	50.00	0.00
	2:45	71.60	50.00	50.00	0.00
6/7/2004	11:45	70.60	50.00	49.99	(0.01)
	12:45	71.00	50.00	49.99	(0.01)
	2:00	71.50	50.00	49.99	(0.01)
6/11/2007	11:20	72.00	50.00	49.99	(0.01)
	1:30	72.60	50.00	49.99	(0.01)
6/12/2007	9:30	72.70	50.00	50.00	0.00
	12:00	73.90	50.00	49.99	(0.01)
6/14/2007	10:00	74.30	50.00	50.00	0.00
	10:50	74.70	50.00	50.00	0.00
	11:20	75.00	50.00	50.00	0.00
	3:15	75.50	50.00	50.00	0.00
	4:20	75.60	50.00	50.00	0.00
6/15/2007	4:30	74.90	49.99	49.99	0.00
	5:30	75.10	49.99	50.00	0.01
	7:00	74.50	49.99	49.99	0.00
	8:00	74.50	49.99	49.99	0.00
	8:55	74.50	49.99	49.99	0.00
	9:45	74.60	50.00	50.00	0.00
6/18/2007	11:30	75.90	50.00	50.00	0.00
	12:35	76.20	50.00	50.00	0.00
	2:00	76.40	50.00	50.00	0.00
	3:15	76.40	50.01	50.00	(0.01)
6/19/2007	12:20	63.70	50.00	50.00	0.00
	1:15	63.80	50.00	49.98	(0.02)
	2:10	64.20	49.99	49.99	0.00
6/20/2007	10:00	64.90	50.00	50.01	0.01
	10:45	65.10	50.00	50.00	0.00

Mass Flow Meter Calibration Data					
Date	**Time**	**Temp °F**	**Meter Gal**	**Prover Gal**	**Diff in cc**
	11:20	65.20	50.00	50.00	0.00
	12:00	65.40	50.00	50.00	0.00
	12:30	65.50	50.00	50.00	0.00
	1:30	65.50	50.00	50.00	0.00
	2:10	65.70	50.00	50.00	0.00
	2:40	66.00	50.00	50.00	0.00
7/2/2007	12:45	69.60	50.00	50.00	0.00
	2:00	69.90	50.00	50.00	0.00
7/3/2007	9:45	69.60	50.00	50.00	0.00
	10:30	69.80	50.00	49.99	(0.01)
	11:10	70.00	50.00	50.00	0.00
	11:45	70.20	50.00	50.00	0.00
	12:45	70.50	50.00	50.00	0.00
7/5/2007	8:00	70.50	50.00	50.00	0.00
	8:45	70.80	50.00	50.00	0.00
	9:30	71.20	50.00	50.00	0.00
	10:15	71.50	50.00	50.01	0.01
	11:30	71.70	50.00	50.01	0.01
7/6/2007	8:20	71.00	50.00	50.01	0.01
	9:00	71.10	50.00	50.00	0.00
	9:40	71.20	50.00	50.00	0.00
	10:30	71.40	50.00	50.00	0.00
	11:30	71.50	50.00	49.99	(0.01)
	12:15	71.70	49.99	49.99	0.00
	12:50	71.90	50.00	49.99	(0.01)
	1:30	72.00	50.00	49.99	(0.01)
	2:10	72.30	50.00	49.98	(0.02)
7/9/2007	8:45	73.40	50.00	49.99	(0.01)
	9:30	73.50	50.00	50.00	0.00
	10:05	73.50	50.00	50.00	0.00
	10:45	73.70	50.00	49.99	(0.01)
	11:30	73.70	50.00	50.00	0.00
	1:30	73.70	50.00	50.00	0.00
	2:10	74.10	49.99	49.98	(0.01)
	2:40	74.70	50.00	49.98	(0.02)
	3:20	75.40	50.00	49.98	(0.02)
7/10/2007	9:30	76.00	50.00	50.00	0.00
	10:10	76.10	50.00	50.00	0.00

Mass Flow Meter Calibration Data					
Date	**Time**	**Temp °F**	**Meter Gal**	**Prover Gal**	**Diff in cc**
	10:45	76.10	50.00	50.00	0.00
	11:30	76.20	50.00	50.00	0.00
	12:10	76.30	50.00	49.99	(0.01)
7/11/2007	1:30	76.30	50.00	50.00	0.00
	2:10	76.30	50.00	50.00	0.00
	2:45	76.30	50.00	50.00	0.00
	3:25	76.30	50.00	49.99	(0.01)
7/16/2007	9:15	67.10	50.00	50.01	0.01
	10:15	67.40	50.00	50.00	0.00
	11:45	67.40	50.00	49.99	(0.01)
	12:30	67.80	50.00	49.99	(0.01)
	1:15	68.10	50.00	49.98	(0.02)
7/17/2007	11:15	69.00	50.00	50.00	0.00
	11:50	69.40	50.00	50.00	0.00
	12:30	69.60	50.00	49.99	(0.01)
	4:00	70.10	50.00	50.00	0.00
	4:50	70.30	50.01	50.02	0.01
7/18/2007	10:00	70.50	50.00	50.01	0.01
	10:40	70.60	50.00	50.00	0.00
	11:15	70.80	50.00	50.00	0.00
	11:50	70.80	50.00	50.00	0.00
	12:45	70.90	50.00	50.00	0.00
7/19/2007	10:00	71.60	50.00	50.00	0.00
	11:10	71.80	50.00	49.99	(0.01)
	12:00	71.80	50.00	50.00	0.00
	1:00	71.90	50.01	50.00	(0.01)
7/23/2007	1:10	72.30	50.00	50.01	0.01
	2:15	72.80	50.00	50.00	0.00
7/26/2007	12:30	71.60	50.00	50.00	0.00
	1:15	71.70	50.00	50.00	0.00
	2:00	71.80	50.00	50.00	0.00
7/30/2007	11:00	73.00	50.00	50.00	0.00
	11:45	72.60	50.00	50.00	0.00
	12:30	70.20	50.00	50.00	0.00
	1:15	67.70	50.00	50.00	0.00
	2:15	65.60	50.00	50.00	0.00
	4:00	70.90	50.00	50.00	0.00
	4:40	71.80	50.00	50.00	0.00

Mass Flow Meter Calibration Data					
Date	**Time**	**Temp °F**	**Meter Gal**	**Prover Gal**	**Diff in cc**
	5:15	72.40	50.00	50.00	0.00
	6:00	72.80	50.00	50.00	0.00
	6:40	73.40	50.00	49.98	(0.02)
8/1/2007	11:45	73.50	50.00	50.00	0.00
	12:30	73.70	50.00	50.00	0.00
	1:15	74.00	50.00	50.00	0.00
	2:00	74.30	50.00	50.00	0.00
	2:35	74.70	50.00	49.99	(0.01)
	11:15	75.00	50.00	50.00	0.00
	12:30	76.10	50.00	49.99	(0.01)
8/7/2007	10:15	75.20	50.00	50.00	0.00
	11:00	75.50	50.00	50.00	0.00
	11:40	75.80	50.00	50.00	0.00
	12:15	76.00	50.00	50.00	0.00
8/8/2007	9:45	75.40	50.00	50.00	0.00
	11:30	76.50	50.00	50.00	0.00
	2:00	76.80	50.01	50.01	0.00
	3:00	77.00	50.00	50.00	0.00
8/9/2007	10:15	76.10	50.00	50.00	0.00
	12:00	76.60	50.00	50.00	0.00
8/13/2007	10:35	76.10	50.00	50.01	0.01
	11:30	76.90	50.00	50.02	0.02
	12:20	77.00	50.00	50.01	0.01
	1:00	77.60	50.00	50.01	0.01
	1:40	77.90	50.00	50.01	0.01
	2:15	78.20	50.00	50.01	0.01
	3:45	78.20	50.00	50.00	0.00
	4:20	78.30	50.00	50.00	0.00
	5:00	78.40	50.00	50.00	0.00
8/14/2007	4:15	77.40	50.00	50.01	0.01
	6:15	77.40	50.00	50.02	0.02
8/15/2007	3:20	77.50	50.00	50.00	0.00
	4:30	77.60	50.00	50.00	0.00
8/16/2007	5:45	77.30	50.00	49.99	(0.01)
	6:20	77.40	49.99	49.99	0.00
	7:00	77.50	49.99	49.98	(0.01)
	7:45	77.50	49.99	49.98	(0.01)
	1:00	77.10	50.00	50.00	0.00

Mass Flow Meter Calibration Data					
Date	**Time**	**Temp °F**	**Meter Gal**	**Prover Gal**	**Diff in cc**
	1:40	77.60	50.00	50.00	0.00
	2:20	78.00	50.00	50.00	0.00
8/20/2007	11:15	68.00	50.00	50.00	0.00
	12:15	68.10	50.00	49.99	(0.01)
	2:00	67.30	50.00	50.00	0.00
	3:15	68.40	50.00	50.00	0.00
8/21/2007	3:00	68.20	50.00	50.00	0.00
	3:40	68.40	50.00	50.00	0.00
	4:20	68.50	50.00	50.00	0.00
	5:00	68.70	50.00	50.00	0.00
	5:50	68.70	50.00	50.00	0.00
8/22/2007	10:00	67.70	50.00	50.01	0.01
	10:45	68.00	50.00	50.01	0.01
8/23/2007	11:30	68.30	50.00	50.00	0.00
	12:15	68.50	50.00	50.00	0.00
	1:10	68.80	50.00	49.99	(0.01)
8/27/2007	9:45	71.70	50.00	50.00	0.00
	10:30	72.10	50.00	50.00	0.00
	11:15	72.40	50.00	50.00	0.00
	11:55	72.60	50.00	50.00	0.00
	12:45	72.80	50.00	49.99	(0.01)
8/29/2007	12:00	72.90	50.00	50.00	0.00
	12:50	73.10	50.00	50.00	0.00
	1:30	73.40	50.00	50.01	0.01
9/11/2007	9:45	69.00	50.01	50.01	0.00
	10:30	69.10	50.00	50.01	0.01
	11:00	69.20	50.00	50.01	0.01
	11:45	64.20	50.00	50.01	0.01
	12:30	64.20	50.00	50.00	0.00
	12:50	64.20	50.00	50.00	0.00
	1:30	64.20	50.00	50.02	0.02
	3:00	64.40	50.00	50.02	0.02
9/12/2007	12:00	68.40	50.00	50.00	0.00
	2:00	68.60	50.00	50.00	0.00
9/14/2007	9:00	68.10	50.00	50.01	0.01
	10:15	68.30	50.00	50.00	0.00
	11:30	68.40	50.00	50.00	0.00
	12:15	68.80	50.00	49.99	(0.01)

Mass Flow Meter Calibration Data					
Date	**Time**	**Temp °F**	**Meter Gal**	**Prover Gal**	**Diff in cc**
	1:20	69.00	50.00	49.98	(0.02)
9/18/2007	10:00	67.20	50.00	50.00	0.00
	10:45	67.50	50.00	49.99	(0.01)
	11:25	67.70	49.99	49.99	0.00
9/19/2007	10:00	67.20	50.00	50.01	0.01
	11:20	67.30	50.00	50.00	0.00

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The Report of the Professional Development Committee (PDC)

Stacy Carlsen, Chairman
Marin County Weights and Measures
Novato, California

Reference
Key Number

400 INTRODUCTION

This is the report of the Professional Development Committee (hereinafter referred to as the "Committee" or PDC) for the 96th Annual Meeting of the National Conference on Weights and Measures (NCWM). This report is based on the Interim Report offered in the NCWM Publication 16, testimony heard at public hearings, comments received from the regional weights and measures associations and other parties, the addendum sheets issued at the Annual Meeting, and actions taken by the membership at the voting session of the Annual Meeting. The Informational items presented below were adopted as presented when the Committee's report was approved.

Table A identifies the agenda and appendix items. Agenda items are identified in the Report by Reference Key Number, Item Title, and Page Number. Item numbers are those assigned in the Interim Meeting agenda. A Voting item is indicated with a "**V**" after the item number. An item marked with an "**I**" after the reference key number is an Informational item. An item marked with a "**D**" after the reference key number is a Developing item. The developing designation indicates an item has merit; however, the item was returned to the submitter for further development before any action can be taken at the national level. Table B lists the results of any voting items.

Table A
Index to Reference Key Items

Reference Key Number		Title of Item	Page
400		**INTRODUCTION**	**PDC - 1**
401		**EDUCATION**	**PDC - 2**
401-1	I	National Certification Program (NCP)	PDC - 2
401-2	I	Instructor Improvement	PDC - 11
401-3	I	Recommended Topics for Conference Training	PDC - 12
402		**PROGRAM MANAGEMENT**	**PDC - 14**
402-1	I	Safety Awareness	PDC - 14
402-2	I	PDC Publication	PDC - 15

Appendices

A	NCWM Curriculum Work Plan	PDC - A1
B	Package Checking Segments (Draft)	PDC - B1
C	Converting Technical Content to Training Material	PDC - C1

Table B
Voting Results

Reference Key Number	*House of State Representatives*		*House of Delegates*		*Results*
	Yeas	*Nays*	*Yeas*	*Nays*	
No Voting items					

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

401 EDUCATION

401-1 I National Certification Program (NCP)

Source: Carry-over Item 401-1. (This item originated from the Committee and first appeared on its Agenda in 2003.) The Committee has combined items previously numbered as Item 401-1 National Certification Program (NCP), Item 401-2 Create a Curriculum Plan, and Item 401-4 Certification into one item covering all aspects of the Certification Program.

Background/Discussion: For complete background information, see the Professional Development Committee (PDC) page or the PDC meeting archives on the NCWM website (www.ncwm.net), or the previous Committee reports available from the National Institute of Standards and Technology (NIST) website (http://www.nist.gov/pml/wmd/pubs/index.cfm).

The Committee set a goal at the 2009 Annual Meeting to conduct an on-line beta test on the retail motor fuel curriculum. The beta test is completed and the results reviewed and analyzed.

Results:

- 63 took exam/43 completed exam/20 timed out and did not receive a score.
- 6 passed with passing set at 85 %.
- 20 would have passed if passing were set at 75 %.
- 27 would have passed if passing were set at 70 %.

What did the results show about the exam process itself?

- The settings of the service caused a large number of people to time out. Each section of the test was timed. Any remaining time from one section could not be added to the next sections, but the instructions did not make that clear to the candidates. In addition, if candidates timed out in the first section, they were not allowed to continue to the other sections. The NCWM staff has corrected this. In the future, if a candidate times out on a section, the candidate will just progress to the next section or the test will end. The candidate will receive the score for all questions answered correctly.

- Some candidates had web navigation issues. It was difficult or impossible to use an electronic version of Handbook 44 (HB 44) as a reference while taking the test. Reviewing past answers was cumbersome because the candidates were required to page back question by question. There is no solution for this, as this is the way the testing service operates. Candidates should consider using a hardcopy of HB 44 when taking the test.

- The illustration graphic quality needs improvement. We are going to make every effort to provide quality graphics in the first case, and to improve graphics where test results show that improvements are necessary.

- The grading of short answer questions was very intolerant of variations like capitalization and punctuation. The Committee believes that short answer questions are necessary to test for the ability to apply code requirements. To help in this regard, the Committee is working on improved instruction on how to take the test. A sample test, which will not be timed or graded, may be built into the test itself. The Committee is also looking at using a pull-down help feature on some questions to aid the candidate in properly formatting the answers.

- Some candidates could not see the entire question without scrolling down. Others experienced difficulty seeing the graphics. These problems relate to the candidates' computer settings, and can be corrected by changing the screen resolution, or by using the zoom function on the bottom of the Internet browser. The graphics can be seen by adjusting the candidates' browser security settings. The Committee thinks that the sample test can be designed so that the candidate discovers these problems before getting to the real test. The candidate will then have the opportunity to leave the exam and make the needed setting changes or consult with information technology (IT) specialists as needed. In addition, a guide to taking the NCWM certification tests could be written addressing frequently asked questions (FAQs) that arise out of taking the tests.

What did the results show about the exam content?

- The Committee analyzed the scoring versus the elapsed time on each section and found that 16 of the 20 people, who timed out on the test, did so on the first section, relating to general HB 44 questions. Three people timed out in the general liquid measuring section, and only one person timed out on the retail motor fuel device (RMFD) section. The Committee will be adjusting the timing by taking five minutes off the RMFD section, and adding it to the HB 44 section. The Committee also expects that timeout problems will decrease as candidates become accustomed to taking tests with timed sections.

- Questions with high error rates and low average times were identified as problem questions. People thought they knew the answers, as evidenced by the quickness of their responses, but the error rate indicates that something is potentially wrong with those questions. Questions with high error rates and long response times will also be subject to review to determine whether they exceed the learning objectives.

- Ms. Georgia Harris, NIST Weights and Measures Division, assisted the Committee with information on ISO 17204, which is the ISO guide for certification bodies. One component of this guide is analysis of the cut score that defines the passing grade. A wealth of information exists on setting the cut score to define the minimally competent person. The competent group includes individuals at the basic, proficient, and advanced levels. The Committee wants to ensure that the candidate at the bottom of the basically competent group has a reasonable chance of passing the test. Based upon the results of the beta test, the Committee thinks that the cut score for the RMFD test should be set at either 70 % or 75 %.

- Future tests will require similar question evaluation and cut score analyses; that will require staff resources to coordinate the review of questions and tests.

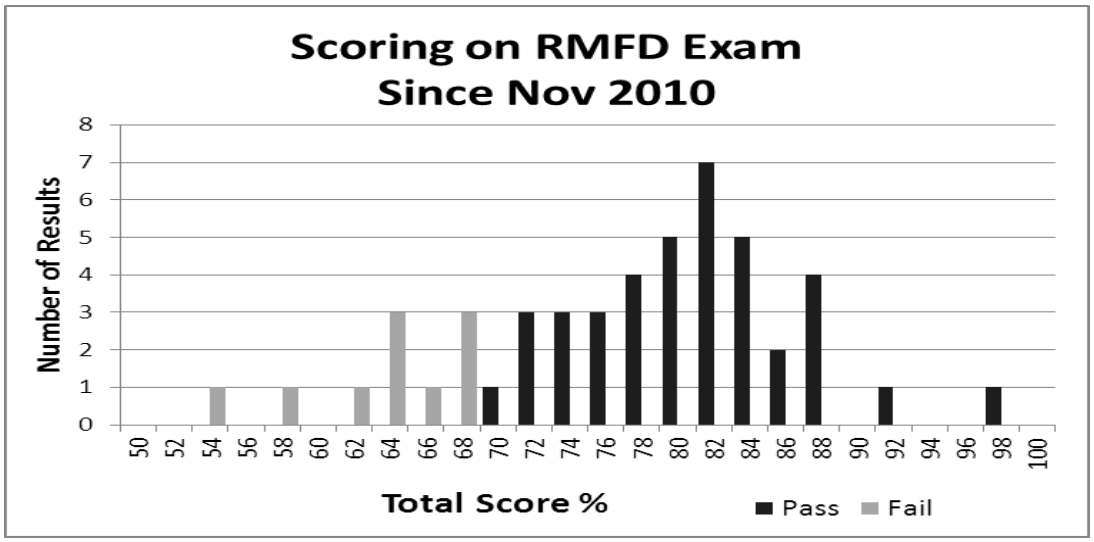
Using what was learned from the beta exam, the Committee:

- made changes to the time allocation on the test;

- adjusted the passing score;
- rewrote or eliminated problem questions;
- wrote a practice test which is included as an option on the exam site; and
- updated the instructions for taking the test.

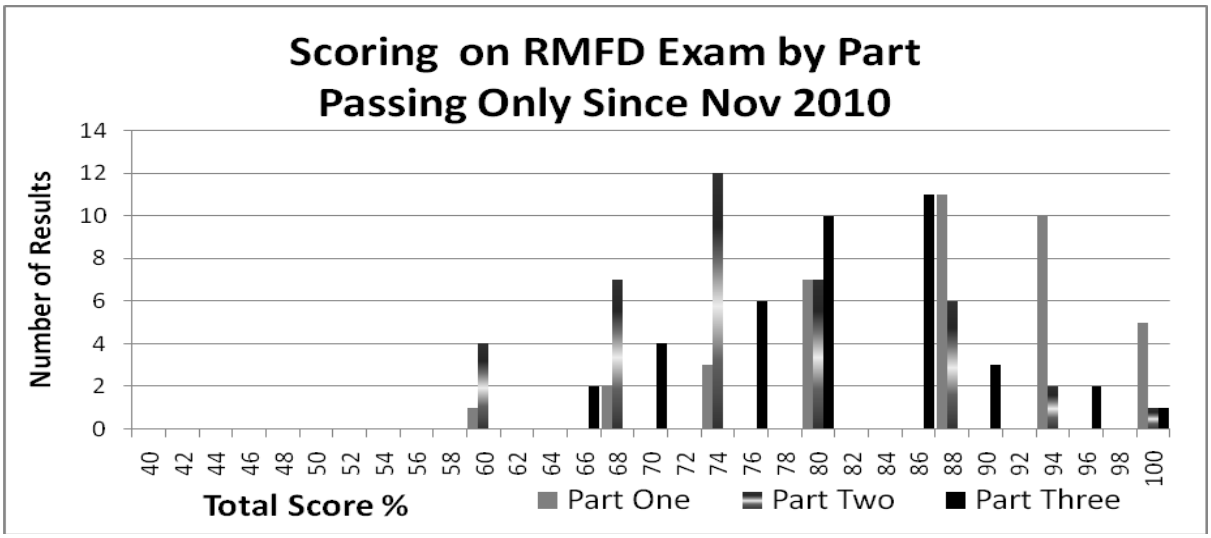
The revised RMFD exam was made available November 1, 2010. As of January 1, 2011, 22 individuals had taken the exam 28 times resulting in 21 certifications issued. This indicates that some took the test more than once to achieve a passing score. The average passing score was 82 %.

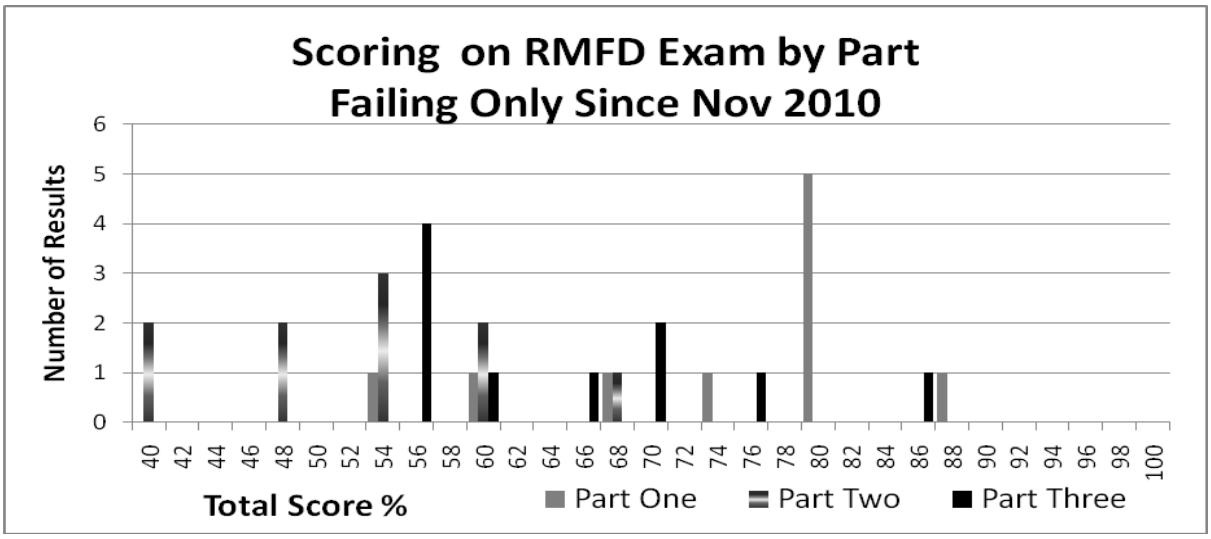
The Committee received an update on the RMFD Certification exam covering results from November 2010 to July 1, 2011. Since the NCWM Certification Program went active on the Retail Motor Fuel Device exam in November 2010, there have been 49 completed exams. The overall results appear below. The median score for passing candidates was 82 % (with 70 % minimum score to pass). The high score thus far was 98 %. The Committee is pleased to see these results, as they support our expectations based on the analysis of the beta exam. Most importantly, we can see the separation between those that passed and those that failed.



The critical role of the certification exam is not to showcase your successful candidates, but rather to separate the "minimally qualified candidate" from those that are not qualified. Our focus has to remain on the 70 % dividing line, to see if we can see the formation of two distributions; one for the passing candidates and one for the failing candidates. While we only have 10 failing candidates, it does appear that we are getting that separation.

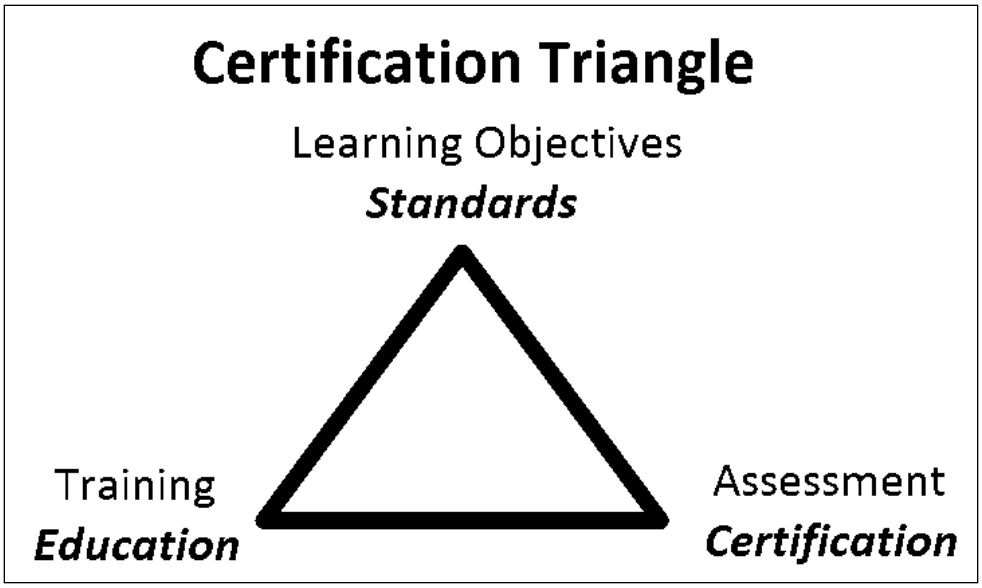
The analysis also looked at scoring on each of the three parts of the exam. The two parallel graphs below present a comparison of the scoring by the passing candidates versus the failing candidates. The Committee sees the clear separation of those two categories in our exam. We see a normal bell curve appearing for the passing candidates, but see scoring well below the 70 % passing score and wide variation with the failing candidates.



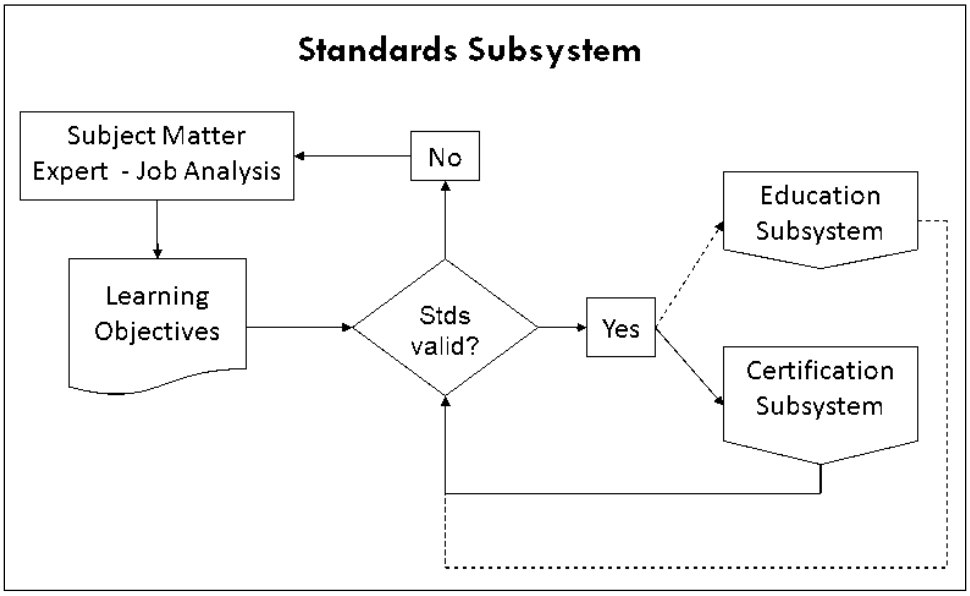


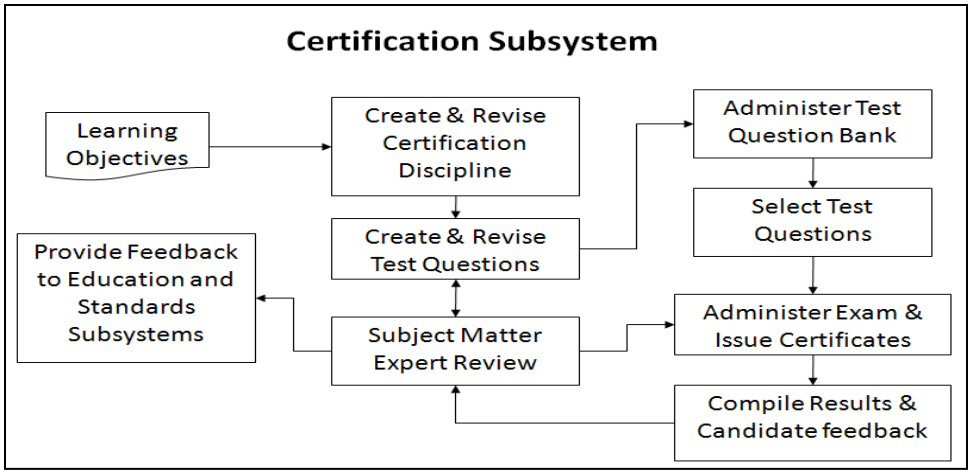
What did the result show about the Committee's plan for certification?

The low passing rate on the beta exam may indicate that parts of the system are not working together. It is important that users of the NCWM Certification Program understand how the pieces fit together and form a coherent system. To illustrate the relationships we can describe the system as a triangle of interdependent parts (see diagram below). The standards come in the form of goals with measureable learning objectives. The education part involves training provided to help the candidate reach the desired level of proficiency for each of the learning objectives. The certification involves an assessment of proficiency that measures whether or not the objectives have been met.



The Committee has until now focused attention on the standards and the certification pieces in the triangle as illustrated in the flowcharts below.





The Committee has described this work in a number of documents. Ms. Carol Hockert, NIST WMD has indicated that the partnership between NCWM, the states, and NIST WMD will benefit from consistency in the terms we use in our training/certification programs, and that the terms the Committee are using are not consistent with current usage in the education field. Therefore, the Committee has resolved to revise some of the terminology we use in our program. Changes to terminology are listed below.

Body of Knowledge (replaces "curriculum") – refers broadly to the knowledge and skills required to function as a Weights and Measures Professional. The term or its acronym "BOK" may refer broadly to the entire scope of knowledge and skills required within the profession, or in a more directed manner to any selected subset for which the particular person is responsible. The BOK describes *what* you expect the Weights and Measures Professional to achieve, as opposed to, *how* he/she will achieve it. To make the BOK more manageable in administration of the National Certification Program, it will be subdivided into Modules in a tree-like structure moving from general knowledge and skills to more specific areas.

Module (formerly "curriculum segment") – refers to a group of related subject materials within the BOK. The module contains the articulated learning objectives for the subject area. Each module can be thought of as a single, self-contained course of study. However, a broader course may span multiple modules, and refreshers, seminars, etc. may include only part of a module or parts of multiple modules. The PDC Committee has created a standard format to create modules for the NCWM National Certification Program. The Committee has also created the Curriculum Outline and Workplans to help manage the work activities within the program, to create the many modules necessary to cover the entire profession.

Learning Objective (formerly "outcome" or "milestone") – refers to the articulation of expectations of performance in measureable terms. Learning objectives are stated using active terms, so as to be precise and measureable. There are two types of learning objectives, a "terminal objective" and an "enabling objective." Terminal learning objectives state broadly the expectation of performance. The enabling objectives state the specific parts or steps required to demonstrate competence. The PDC has developed a guide to writing learning objectives of both parts, and this includes the active verbs associated with the cognitive levels in Boom's Taxonomy. In training, the instructor will typically choose learning activities to explore each of the enabling objectives in an attempt to reach the terminal objective. In assessment, the questions will typically test for competence in each of enabling objectives to demonstrate that the terminal objective has been met.

Certification – refers to verification of competence relative to all or part of the body of knowledge for the profession as designated by the PDC for inclusion in a certification exam. The selected body of knowledge using modules is documented in a test description. Each of the modules, or combinations, are given a specific weighting in the design of the test. After obtaining a passing score on the exam, the candidate is issued a certificate stating he/she has met the competency standard.

Curriculum – refers to the list of Modules that are used to document the Body of Knowledge.

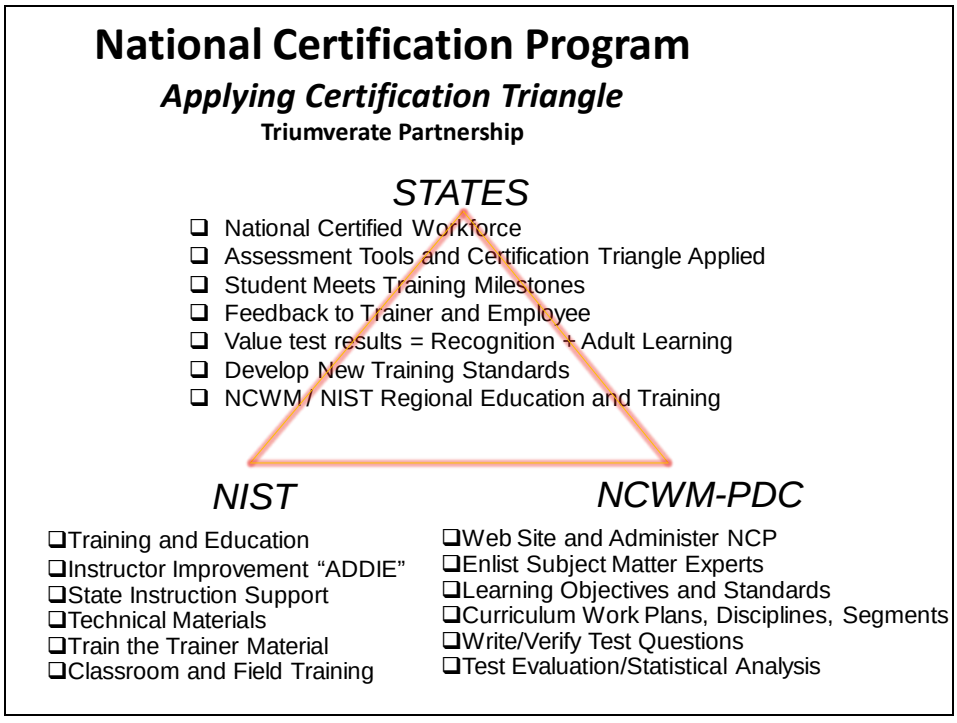
Bloom's Taxonomy – refers to a classification of higher levels of cognitive learning, widely used in education, in many fields. The levels are knowledge, understanding, application, analysis, integration, and evaluation. The active verbs used in the articulation of learning objectives define the cognitive level. In training, the learning activities are matched to the cognitive level. In assessment, the form of the question is also matched to the cognitive level. The use of Bloom's Taxonomy is described in detail in the Body of Knowledge Model document.

The Committee has prepared program documents that are available on the NCWM website. These documents will be revised, where required, to reflect the terminology changes in the near future and updated on the website.

- The Curriculum Outline, which breaks the profession of weights and measures into component parts called Modules.
- The Body of Knowledge Model (formerly Core Curriculum Model) explains how to create Modules to document the learning objectives.
- The Modules developed thus far (formerly Curriculum Segments).
- The Certifications developed thus far (formerly Certification Disciplines).

Results of the beta test indicate it will be very important as the program moves forward, that trainers integrate the learning objectives into their materials, and design courses in such a way that students will achieve the desired levels of learning. See Item 401-2 Instructor Improvement.

Discussion: At the 2011 Interim Meeting, the Committee addressed the need to build partnerships between the states, NIST, and NCWM. Each group has roles in relation to the Certification Triangle as shown in the following diagram.



Four of the critical elements for continuing development of certification programs are:

- Appointment by the NCWM Board of a Certification Exam Coordinator to ensure the credibility and integrity of the certification process;

- Enlistment of Subject Matter Experts (SME) from states, counties, industries, and NIST to identify the learning objectives for new disciplines, and for writing and reviewing test questions;

- Utilization by the states of the NCWM curriculum standards; and

- Improvement of instructors through training on how to use appropriate learning objectives (NCWM curricula) and adult learning methods.

With regard to the first bullet above, the Committee is pleased to have a staff person working for NCWM to coordinate the National Certification Program. Mr. Ross Andersen, New York State, retired, has been hired on a part-time basis by the Board to coordinate activities within the program in cooperation with the PDC. The following is an excerpt from the NCWM Certification Coordinator contract listing the duties:

a. Act out the duties defined in this contract, the direction of the NCWM Board of Directors, and the work of the Professional Development Committee (PDC) in the development of examination and certification of weights and measures professionals in the areas of small capacity scales, package checking, vehicle tank meters, and other areas as work progresses through the term of this contract.

b. Communicate effectively with the NCWM Executive Director, his staff, the PDC and others toward the successful coordination of efforts.

c. Participate in meetings and work sessions of the PDC when necessary, to the development of examinations for certification.

d. Identify an appropriate number of qualified Subject Matter Experts (SMEs) who will serve as volunteers to NCWM in developing certification exam questions, reviewing questions, and improving questions as necessary. Provide assistance and training to SMEs in performance of their activities.

e. Coordinate the efforts of the PDC, SMEs, and NCWM staff as outlined in Appendix A to this agreement.

f. Establish deadlines for each phase of the project and communicate those deadlines to volunteer leadership.

g. Provide curriculum segments, exam question banks, and beta analysis of test results in an expeditious manner to facilitate growth of the National Certification Program.

h. Provide maintenance analysis of existing exams upon request of the Executive Director.

i. Provide monthly status reports to the Executive Director on progress of each exam that is under development.

With regard to the second bullet, the Committee has developed a guide for Subject Matter Experts (SMEs) to help describe the activities we need them to provide. This document is under final review and will be posted soon on the NCWM website. The Certification Coordinator has enlisted a good number of SMEs to begin work on certification exam questions for the Small Capacity Scales Class III and Basic Package Checking certifications. We are also working to expand our list of state training coordinators, which we use to recruit SMEs to assist us in the program.

In open hearings, the Committee heard comments that local jurisdictions also be asked to provide SME volunteers. The Committee agrees, and will consider avenues to reach out to local jurisdictions. If experts from any jurisdiction or business are interested in volunteering, they can contact the Committee Chair through the PDC page on NCWM's website.

The Certification segments currently developed (or in development) are:

- Retail Motor Fuels – certification available through NCWM;
- Basic Package Labeling/Checking;
- Small Capacity Scales; and
- Vehicle Tank Meters.

The Committee asked for feedback regarding which of the following segments should be developed next:

- Liquid Petroleum Gas (LPG);
- Large Capacity Scales;
- Taxi Meters; and
- Price Verification.

The Committee received no feedback at the Interim Meeting. Since then, the Committee has received comments from a state police agency in Oregon, asking if the NCWM could create a certification exam for police that use highway weight scales (i.e., wheel-load weighers and portable axle-load scales). The Committee also got a request from the Central Weights and Measures Association (CWMA) to consider creating NCWM certification exams for registered service persons. The problem noted is that our basic competence level in the exams, thus far, has been at the expectation of an employee with one-year experience. The CWMA believes that may not be reasonable for a registered service person. Industries with numerous service agents working across state lines, told the Committee that they saw great benefit in the development of a single exam that would eliminate duplication in testing on technical issues. It was recognized that agents would still have to apply to individual states administratively to get the license, but without the need for additional testing. The Committee also sees the benefit of a single technical exam, but this will require that we get buy-in from the states to accept the NCWM certification. It also means, possibly administering individual state specific exams covering laws and regulations, directed at service agents. We can consider moving down this path if we get some positive feedback from states with registered service persons. The Committee is planning to conduct a survey of the NCWM members on future priorities as we develop future certifications, and will include the issue of registered service agents.

The Committee also sought feedback regarding whether the Package Checking curriculum should stay close to the organization of HB 133, *Checking the Net Contents of Packaged Goods,* as written in Appendix B, or whether it should be re-written to match the organization of the three sections of the test:

- Core Procedure & General Considerations
- Packages Labeled by Weight (Standard & Random)
- Packages Labeled by Volume (Gravimetric & Volumetric)

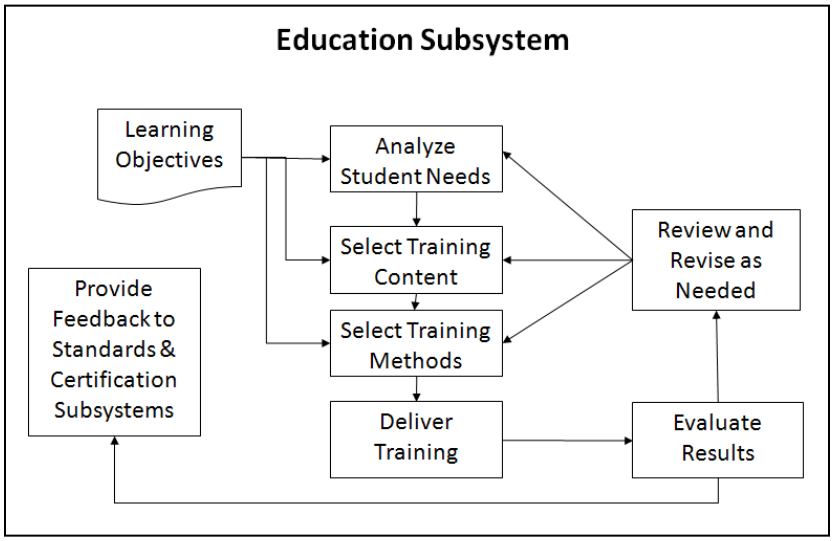
The major difference between the two is that the core procedure (identifying lot, selecting random samples, testing the samples, and evaluating the results) is included with general considerations in the first section of the curriculum, but is included with Packages Labeled by Weight in NIST Handbook 133, which is the primary reference material.

The Committee received no feedback on this item. The Committee will post the Package Checking curriculum based upon the work of the CWMA PDC. (See Appendix B)

401-2 I Instructor Improvement

Source: Carry-over Item 401-3 (This item originated from the Committee and first appeared on its agenda in 2003.)

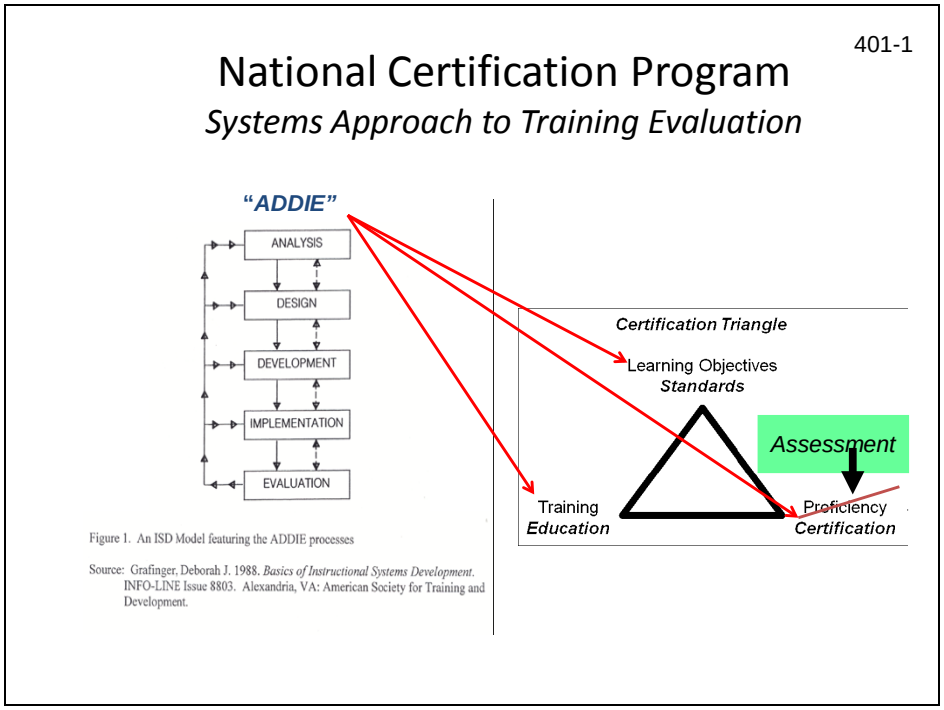
Background/Discussion: Prior to the 2010 Annual Meeting, Ms. Harris, NIST WMD, provided the Committee with reference material on teaching methods and assessment of training success. Distilling the essence of these materials, the Committee feels that instructors need training in more than just the technical material; they need training in setting the learning objectives, developing the training materials with those objectives in mind, selecting training methods that incorporate adult learning styles, and evaluating the effectiveness of their training.



The chart below covers three levels of learning objectives and relates them to the training activities most likely to be successful, and demonstrates best methods for assessing the success of the training. The curriculum segments state the learning objectives using verbs similar to those in the bottom row of the table. These drive both the training activities required to promote adult learning, and the assessment tools appropriate to measure success at that level.

Assessments	Multiple Choice	Multiple Choice	Practical Examples Short Answer
Training Activities	Lecture Videos Examples	Discussion Review Learner Presentation	Exercises Simulations Demonstrations
Cognitive Levels	**Knowledge**	**Comprehension**	**Application**
	Define Relate List	Restate Discuss Describe Identify	Employ Apply Use Illustrate

NIST WMD has expressed strong interest in collaborating with the NCWM in efforts to educate instructors in adult learning techniques and relating them to the learning objectives in the NCWM curriculum. Appendix C contains NIST material on converting technical content to training material. The importance of pre-training analysis and post-training evaluation cannot be overestimated. Failure to include these steps often leads to failure of training efforts.



Discussion: Ms. Carol Hockert (NIST), commented that NIST and PDC need to work together to clarify training terminology. She also suggests that the PDC needs to communicate with state directors to make sure we know their goals for the certification program, so that we are designing the tests to assess whether they are meeting those goals.

The Committee is calling on the states and other training developers to implement the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model in their training preparations and post training evaluation. Everyone needs to participate in the development of the curriculum segments, and then encourage their trainers to use them in their training plans.

401-3 I Recommended Topics for Conference Training

Source: Carry-over Item 401-5 (This item originated from the Committee and first appeared on its agenda in 2003.)

Background/Discussion: The Board has charged the Committee with responsibility for selecting appropriate topics for the technical sessions at future Annual Meetings. The Board asked that the Committee review and prioritize possible presentations and submit those to the Chairman. The Chairman would then work with NCWM staff to make the arrangements and schedule the sessions.

The Committee continues to carry the following list and recommends these topics for possible training seminars, roundtables, or symposia for presentation at the NCWM meetings:

(a) Marketplace Surveys;

(b) Alternative Fuels (Fuel Volatility Issues and Ethanol Blending, and Biodiesel Blend Issues);

(c) Ergonomics (including Proper Lifting Techniques, Back and Stress Techniques and Office Ergonomics);

(d) Public Relations, specifically dealing with aggressive/angry people (recommended by the SWMA);

(e) General Safety Issues (recommended by the WWMA);

(f) Defensive Driving (recommended by the WWMA);

(g) Administrative Civil Penalty Process (recommended by the WWMA);

(h) Price Verification (recommended by the WWMA);

(i) Customer Service (recommended by the WWMA);

(j) Ethics (recommended by the CWMA);

(k) Moisture Loss;

(l) Economic Justification of W&M Programs;

(m) Demonstrating the Value of Enforcement Programs;

(n) Training the Trainer in Adult Learning Methods; and

(o) Emerging Issues.

The Committee asked for suggestions for future training or recommendation on how to prioritize suggestions already on the list. Based on the needs identified in the first two items (401-1 and 401-2), the Committee would like to recommend that the regional associations and the NCWM consider offering training for trainers on how to identify learning objectives, and design training materials that integrate interactive activities and adult learning styles. NIST has a 1.5-hour course on taking technical material and turning it into a course for adult learners, which may be appropriate to fill this need.

Training Topics already covered may be available on the NCWM website by looking at the meeting archives:

(a) Device Inspections Using a Sampling Model (Mr. Henry Oppermann 2010);

(b) Corrosion Issues with Low Sulfur Diesel (Mr. Ron Hayes 2010);

(c) Diesel Exhaust Fluid (DEF) (Mr. Gordon Johnson, Mr. Randy Moses 2009);

(d) Alternative Fuels (Fuel Volatility Issues and Ethanol Blending, and biodiesel blend issues) (Mr. Ron Hayes 2009);

(e) Investigative Techniques (Mr. Michael Cleary 2009);

(f) Automatic Temperature Compensation (ATC) Analysis of Testing Data (Mr. Henry Oppermann 2008);

(g) Effective Safety & Health Program (Mr. Dan Whipple 2008);

(h) Handbook 44 Scale Code Tare Changes (Mr. Steve Cook);

(i) Automatic Temperature Compensation Issues (Mr. Henry Oppermann and Mr. Ross Anderson 2007);

(j) Analyzing Inspection Data (Mr. Henry Opermann and Mr. Steve Malone 2007);

(k) Grocery Unit Pricing in the United States (Mr. David Sefcik, NIST WMD and Mr. Ian Jarratt, Queensland Consumer Association, Australia 2011); and

(l) Hydrogen Measuring Systems: The Turning Point? (Ms. Kristen Macey 2011).

Discussion: At the 2011 Interim Meeting, comments were heard from Mr. Brett Gurney, Utah, that all stakeholders need training on how to demonstrate the value of our enforcement programs to administrative/legislative levels above us.

Mr. Oppermann suggested a topic of "Economic Justification of Weights and Measures Programs" using data from the latest census in conjunction with compliance data gathered before and after the end of a program or the installation of a new program.

WWMA Discussion: The PDC solicited topics from the WWMA for future conference training. The Committee recognized a need for promoting the value of our programs to stakeholders. Stakeholders include, but are not limited to, executive administrators, elected officials, and the public. During challenging economic times, it is critical that Weights and Measures maintain a strong presence in the marketplace. The NIST, WMD Chief suggested a session to teach trainers how to teach. The WWMA PDC sees a benefit in this type of training for developing presentation skills. The WWMA Board of Directors has recommended that the PDC develop a shared calendar of scheduled training events available to other jurisdictions. The WWMA Board of Directors has suggested that training be conducted, concurrent with, but independent of, the national and regional meetings. This training would utilize the same facilities and could allow for additional savings when negotiating conference locations. This would allow exposure to weights and measures officials that would not normally be able to attend conferences.

The WWMA PDC suggested topics are train the trainer and those topics that would promote Weights and Measures Programs to the stakeholders. One recommended format would be to facilitate a round table to identify success stories and best practices from weights and measures jurisdictions. The WWMA PDC recommends that the NCWM develop a shared calendar of scheduled training and consider scheduling training in conjunction with conferences.

402 PROGRAM MANAGEMENT

402-1 I Safety Awareness

Source: Carry-over Item 402-1 (This item originated from the Committee and first appeared on its agenda in 2003.)

Background/Discussion: In the past, the Committee's responsibility extended to the identification of safety issues in the weights and measures field, and included efforts to increase safety awareness. Jurisdictions are encouraged to send their safety reports and issues to their regional safety liaison, who in turn will forward them to the PDC. Below is a list of the Regional Safety Liaisons.

SWMA	Mr. Steve Hadder, Florida Department of Agriculture and Consumer Services
WWMA	Mr. Douglas Deiman, Alaska Division of Measurement Standards/CVE
CWMA	Ms. Julie Quinn, Minnesota Department of Commerce
NEWMA	Mr. Michael Sikula, New York Bureau of Weights and Measures

The Committee will continue to ask the regions to prepare articles for the NCWM newsletter, and have revised the schedule as follows for future issues. The Committee plans to notify the Regional Safety Coordinators as their assignment date approaches.

Association	Issue	Publication Date	Article Deadline
CWMA	2011, Issue 3	September	July 15, 2011
NEWMA	2012, Issue 1	February	January 16, 2012
SWMA	2012, Issue 2	June	April 16, 2012
WWMA	2012, Issue 3	September	July 16, 2012

E-mail all articles to the NCWM headquarters at info@ncwm.net.

The Committee would like to thank those persons who submitted safety related articles to the NCWM Newsletter. In particular, the Committee recognizes the three contributors thus far, for the 2011 NCWM Newsletters.

- Consumer Tips for Proper Gasoline Handling, 2011 Issue 1 (Mr. Steve Hadder, Florida)
- Vehicle Safety Issues for Weights and Measures Inspector, 2011 Issue 2 (Mr. Douglas Deiman, Alaska)
- Controlling the Risk of Solitary Workers, 2011 Issue 2 (Mr. Brett Gurney, Utah).

The Committee asks for suggestions for safety articles people would like to see in future newsletters, and/or safety issues that need to be addressed immediately. They would like to remind regional associations to check the submission deadlines for their upcoming article assignments. Send completed articles to NCWM headquarters by the submission deadline.

The Committee received a request during the work session that the publication dates be kept current in this ongoing item.

402-2 I PDC Publication

Background/Discussion: The Committee is updating the National Certification pages on the website. These website changes will be demonstrated at the 2011 Annual Meeting. The three main sections of material include:

1. Program Administration – combines historical documentation (curriculum outline and work plan, etc.) with administrative procedures on administering exams and records of certifications;
2. Competency Standards – includes the curriculum segments that describe the objectives and measurable competencies that will be used in certification; and
3. Certification Disciplines – includes one document per certification area, delineating the standards from the curricula that will be covered in the exam and the weighting of the competencies.

All segments of the PDC publication will be posted online as they are developed. New pages within the NCWM website will be created for the curriculum disciplines and segments, so that interested parties can easily find and utilize this material.

At the 2011 Interim Meeting, no comments were received from the floor.

The Committee is in the process of revising its pages on the NCWM website. Some of the changes will include the new terminology (see Item 401-1). In addition, the Committee believes it is vital to move forward with a more formal set of administrative procedures for running a credible certification program. The Committee will be making efforts to continue work done by Mr. Michael Sikula, New York, at the request of the Board, to document our procedures following ISO 17024 guidelines for Certification Bodies.

Mr. Stacy Carlsen, Chair, Marin County, California
Ms. Julie Quinn, Minnesota
Mr. Dale Saunders, Virginia
Ms. Cheryl Ayer, New Hampshire
Mr. Steven Grabski, Walmart

Professional Development Committee

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Appendix A

National Conference on Weight and Measures
National Certification Program

NCWM CURRICULUM WORK PLAN
Revised January 2010

Segment/Subject

Level 1/Level 2/Level 3

1. Fundamentals of Weights and Measures
- 1.1. Introduction to Weights and Measures Programs
- 1.2. W&M Laws and Regulations
- 1.3. Field Standards and Test Equipment
- 1.4. State Program Scope and Overview
- 1.5. Enforcement Powers

2. W&M Administration
- 2.1. Fundamentals of W&M Administration (Commercial System, Powers and Duties, etc.)
- 2.2. Administration Functions (Personnel, Management, Budget, Safety, etc.)
- 2.3. Legislation and Regulations (Legal Considerations, Interaction with Legislature, Stakeholders, Industry, etc.)
- 2.4. Regulatory Control (Device Inspection, Commodities, Complaints)
- 2.5. Laboratory Metrology Administration (Purpose of Laboratory, Responsibilities of Metrologist, NIST Expectations for Recognition of Laboratory, Quality System, Training Requirements, etc.)
- 2.6. Public Relations and Communications (Publicity, Public Relations, Communications)

3. Laboratory Metrology
- 3.1. NIST Basic Metrology
- 3.2. NIST Intermediate Metrology
- 3.3. NIST Advanced Metrology

4. Device Control Program
- 4.1. Safety Considerations
- 4.2. NIST Handbook 44 – Introduction to Device Control
- 4.3. Weighing Systems, General
  - 4.3.1. Static Electronic Weighing Systems, General
  - 4.3.2. Static Mechanical and Hybrid Weighing Systems, General
  - 4.3.3. Dynamic Weighing Systems, General
  - 4.3.4. Precision Weighing Systems Class I and II
  - 4.3.5. Small Capacity Weighing Systems Class III
  - 4.3.6. Medium Capacity Weighing Systems Class III
  - 4.3.7. Large Capacity Class III and IIIL Weighing Systems (Vehicle and Livestock)
  - 4.3.8. Large Capacity Class III and IIIL Weighing Systems - Advanced
  - 4.3.9. Railroad Track Weighing Systems
  - 4.3.10. In-Motion Railroad Track Weighing Systems
  - 4.3.11. Hopper Weighing Systems

- 4.3.12. Automatic Bulk Weighing Systems
- 4.3.13. Automatic Weighing Systems
- 4.3.14. Belt Conveyor Weighing Systems
- 4.3.15. In-Motion Monorail Weighing Systems
- 4.3.16. Point-of-Sale Weighing Systems
- 4.3.17. Other Specialty Weighing Systems

4.4. Dynamic Measuring Systems – General
- 4.4.1. Retail Motor Fuel Dispensers
- 4.4.2. Loading Rack and Other Stationary Metering Systems
- 4.4.3. Loading Rack and Other Stationary Metering Systems – Advanced
- 4.4.4. Vehicle-Tank Meter Systems
- 4.4.5. Vehicle-Tank Meter Systems – Advanced
- 4.4.6. Milk Metering Systems
- 4.4.7. Water Meters
- 4.4.8. LPG/Anhydrous Ammonia Liquid Metering Systems
- 4.4.9. LPG/Anhydrous Ammonia Liquid Metering Systems – Advanced
- 4.4.10. LPG Vapor Meter Systems
- 4.4.11. Mass Flow Metering Systems
- 4.4.12. Other Metering Systems (Cryogenics, Carbon Dioxide, etc.)

4.5. Static Volume Measuring Systems – General
- 4.5.1. Liquid Measures
- 4.5.2. Farm Milk Tanks
- 4.5.3. Dry Measures

4.6. Other Measuring Systems
- 4.6.1. Taximeters and Odometers
- 4.6.2. Wire and Cordage Measuring Systems
- 4.6.3. Linear Measures
- 4.6.4. Timing Devices
- 4.6.5. Weights
- 4.6.6. Multiple Dimension Measuring Systems

4.7. Quality Measuring Systems
- 4.7.1. Grain Moisture Meters
- 4.7.2. NIR Grain Analyzers
- 4.7.3. Carcass Evaluation Systems

5. Market Practices, Laws and Regulations (NIST HB 130) and Commodities (NIST HB 133)

5.1. Safety Considerations – Market Practices, NIST Handbook 130, NIST Handbook 133

5.2. NIST Handbook 130 – Laws and Regulations
- 5.2.1. NIST Handbook 130 – General Provisions
- 5.2.2. Packaging and Labeling Regulations
- 5.2.3. Method of Sale Regulations
- 5.2.4. Quality of Automotive Fuels and Lubricants
- 5.2.5. Price Verification

5.3. NIST Handbook 133 – Package Net Contents Control
- 5.3.1. Commodities – General
- 5.3.2. Packages Labeled by Weight, Standard and Random
- 5.3.3. Packages Labeled by Weight, Special Commodities
- 5.3.4. Packages Labeled by Volume (Volumetric and Gravimetric Testing)
- 5.3.5. Packages Labeled by Volume, Special
- 5.3.6. Packages Labeled by Length/Area/Thickness
- 5.3.7. Packages Labeled by Count
- 5.3.8. Other Package Types

5.4. Test Purchases

5.5. E-Commerce

Note: Initial Verification has been intentionally been left off this listing and will be addressed later.

Appendix B

Packaging Checking Segments (Draft)

National Conference on Weights and Measures
National Certification Program Curriculum
Segment 5.3.1
Commodities - General

Overview and Scope

This segment sets standards for basic inspection and testing for checking the net contents of packaged goods. The segment is geared toward general and basic concepts that can be applied to all package checking. These concepts include such basics as selecting the point of enforcement; understanding lots, package requirements, and moisture allowances; choosing and applying sampling plans; identifying the jurisdictions of other regulatory agencies responsible for package regulations and requirements; and utilizing good measurement practices including the care and use of standards.

Prerequisites:

- None

Objectives and Competencies

1. When and Where to Use Package Checking Procedures

   A weights & measures inspector should understand the principles of when and where to use package checking procedures. To demonstrate that understanding the inspector can:

   - List the types of products which may be tested;
   - Describe how marketplace surveys, sales volume surveys, and audits influence decisions on where to concentrate package checking resources; and
   - Decide the appropriate venue for the investigation being conducted:
     - Point of Pack;
     - Wholesale; and
     - Retail.

2. Package Requirements

   A weights & measures inspector should understand the requirements that apply to inspection lots and to the individual packages within those lots. To demonstrate that understanding the inspector can:

   - Determine an inspection lot;
   - Describe the average requirement for the lot;
   - Describe the individual package requirement;
   - Determine the maximum allowable variation (MAV) for a package;
   - Determine and apply the appropriate moisture allowance if applicable; and
   - Describe exceptions to the average and individual package requirements:
     - For packages labeled by count for 50 or fewer items; and
     - For the capacity of molded glass tumblers and stemware.

3. Sampling Plans

   A weights and measures inspector should understand the principles and reasons for sampling plans as well as the differences between sampling plans. To demonstrate that understanding the inspector can:

   - Determine when to use a category B sampling plan, and when to use Category A;
   - Explain why sampling is used to test packages, why sampling is random, and why statistical corrections are applied to the test results;
   - State the confidence level for each sampling category plan; and
   - Use audit tests and other shortcuts appropriately.

4. Other Regulatory Agencies Responsible for Package Regulations and Applicable Requirements

   A weights and measures inspector should understand the relationships between various agencies with jurisdictions governing package labeling and contents. To demonstrate that understanding the inspector can:

   - List and describe the various other regulatory agencies, their jurisdictions and authorizing legislation:
     - U.S. Department of Agriculture;
     - U.S. Food and Drug Administration;
     - Federal Trade Commission;
     - U.S. Environmental Protection Agency;
     - Bureau of Alcohol, Tobacco and Firearms; and
     - State and Local Weights & Measures Agencies.

5. Good Measurement Practices

   A weights and measures inspector should understand good measurement practices as they relate to test standards and equipment. To demonstrate that understanding the inspector can:

   - Determine that his/her standards and equipment meet the traceability requirement for measurement standards and test equipment; and
   - Determine that his/her standards and equipment meet the certification requirement for standards and test equipment.

Contributors:
5/15/08 – Initial Draft – CWMA (Ms. Rachelle Miller, Wisconsin, Chair)
01/12/11– Revised Draft – (Ms. Julie Quinn, Minnesota)
01/13/11 – Editorial revision by NCWM PDC (Mr. Stacy Carlson, Marin County, California, Chair)

National Conference on Weights and Measures

National Certification Program Curriculum
Segment 5.3.2
Packages Labeled by Weight, Standard and Random

Overview and Scope

This segment sets standards for basic inspection and testing for checking the net contents of packaged goods. The segment is geared toward specific concepts that can be applied to checking random and standard packages labeled by weight, including concepts relating to the device technology, inspection considerations and requirements, and test procedures.

Prerequisites:

- Segment 5.3.1 Commodities - General

Objectives and Competencies

1. Gravimetric Test Procedure for Checking the Net Contents of Packaged Goods.

   A weights and measures inspector should understand that gravimetric testing is used to determine the net weight of packages labeled in weight, and be able to explain why it is the preferred method for testing most products.

2. Measurement Standards and Test Equipment.

   A weights and measures inspector should understand the criteria for selecting test equipment and the procedures for verifying test equipment. To demonstrate that understanding the inspector can:

   a. Calculate $\frac{1}{36}$ MAV for any given package labeled by weight;
   b. State how often and under what conditions a scale should be verified;
   c. State what considerations affect measurement accuracy;
   d. Utilize Table 1-1 and Table 1-2 to determine the tolerance which applies to the test scale;
   e. Verify the test scale using the following procedures:

      i. Increasing Load Test;
      ii. Decreasing Load Test; and
      iii. Shift Test.

   f. Select other standards and measurement equipment in accordance with the requirements of NIST Handbook 105, including:

      i. Mass standards;
      ii. Volumetric flasks and cylinders;
      iii. Stopwatches; and
      iv. Thermometers.

3. Basic Test Procedure

   A weights & measures inspector should understand the basic gravimetric test procedure. To demonstrate that understanding the inspector can:

   a. Identify and define the inspection lot;
   b. Determine whether the lot is random or standard pack;

c. Select the appropriate sampling plan;
d. Select the random sample;
e. Decide the appropriate type of tare to be used –
    i. Used dry tare;
    ii. Unused dry tare; or
    iii. Wet tare.
f. Determine tare weight for the random sample;
g. Measure the net contents of the packages in the sample;
h. Evaluate compliance with the MAV requirement;
i. Evaluate compliance with the average requirement; and
j. Calculate and apply moisture allowance when appropriate.

Contributors:
5/15/08 – Initial Draft – CWMA (Ms. Rachelle Miller, Wisconsin, Chair)
01/12/11 – Revised Draft – Ms. Julie Quinn
01/13/11 – Editorial revision by NCWM PDC (Mr. Stacy Carlson, Marin County, California, Chair)

National Conference on Weights and Measures

National Certification Program Curriculum
Segment 5.3.4
Packages Labeled by Volume (Volumetric and Gravimetric)

Overview and Scope

This segment sets standards for basic inspection and testing for checking the net contents of packaged goods. The segment is geared toward specific concepts that can be applied to checking packages labeled by volume using either gravimetric or volumetric means. T he segment includes concepts relating to device technology, inspection considerations and requirements, and test procedures.

Prerequisites:

- Segment 5.3.1. Commodities – General
- Segment 5.3.2. Packages Labeled by Weight, Standard and Random

Objectives and Competencies

1. Scope

   A weights and measures inspector should understand which products may be tested using these procedures. To demonstrate that understanding the inspector can:

   a. Explain the roles density and product temperature play in determining whether gravimetric or volumetric testing will be conducted; and
   b. Utilize Table 3-1 to determine the appropriate reference temperature for a liquid.

2. Measurement Standards and Test Equipment

   A weights and measures inspector should understand the criteria for selecting test equipment, and the procedures for verifying test equipment. To demonstrate that understanding the inspector can:

   a. Determine the density of the liquid and calculate the nominal gross weight of the package;
   b. Calculate $^1/_6$ MAV for the package based upon its nominal gross weight;
   c. Select the appropriate volumetric measure based upon the declared volume of the package; and
   d. Select other standards and measurement equipment in accordance with the requirements of NIST Handbook 105, including:

      i. Stopwatches;
      ii. Thermometers.

3. Basic Gravimetric Test Procedure

   A weights and measures inspector should understand the basic gravimetric test procedure. To demonstrate that understanding the inspector can:

   a. Identify and define the inspection lot;
   b. Select the appropriate sampling plan;
   c. Select the random sample;
   d. Bring the packages and their contents to the proper reference temperature;
   e. Determine tare weight for the random sample;
   f. Wet down a clean volumetric measure;

g. Determine the density of the liquid and calculate the nominal gross weight of the package;
h. Measure the net contents of the packages in the sample;
i. Evaluate compliance with the MAV requirement; and
j. Evaluate compliance with the average requirement.

4. Basic Volumetric Test Procedure

A weights & measures inspector should understand the basic gravimetric test procedure. To demonstrate that understanding the inspector can:

a. Identify and define the inspection lot;
b. Select the appropriate sampling plan;
c. Select the random sample;
d. Bring the packages and their contents to the proper reference temperature;
e. Wet down a clean volumetric measure;
f. Measure the net contents of the packages in the sample;
g. Evaluate compliance with the MAV requirement; and
h. Evaluate compliance with the average requirement.

Contributors:
5/15/08 – Initial Draft – CWMA (Ms. Rachelle Miller, Wisconsin, Chair)
01/12/11 – Revised Draft – (Ms. Julie Quinn, Minnesota)
01/13/11 – Editorial revision

Appendix C

Converting Technical Content to Training Material

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Abstract: This paper provides the basis for an interactive tutorial and covers how to convert technical content to training materials. It includes: defining the audience, writing Learning Objectives, designing content and activities to achieve objectives, engaging participants in learning activities using adult learning methods, and assessing the learning event to determine whether objectives have been met. Examples are provided from NCSL International[1] resources. The instructional approach in this paper covers the Analysis, Design, and Development phases of the ADDIE instructional system development (ISD) model; due to time constraints, it will only briefly touch on the Implementation and Evaluation phases. The paper integrates concepts from Bloom's Taxonomy and criteria from the ANSI/IACET[2] standard for offering continuing education units as an Authorized Provider.

Learning Objectives: Given the handouts and practical experience during the tutorial session, participants will be able to successfully:

1. Identify the phases of the ADDIE instructional design model;
2. Define the appropriate audience for training content;
3. Identify and Create well-written Learning Objectives;
4. Give examples of Activities that will engage adult participants and achieve Learning Objectives; and
5. Identify appropriate Assessment methods to determine whether Learning Objectives have been met.

Background

The NCSLI Strategic Plan has identified an effort to create training resources to match with NCSLI publications as they are created and updated. NCSLI is also seeking to gain compliance with the International Association for Continuing Education and Training (ANSI/IACET) criteria for offering Authorized Provider Continuing Education Units (CEUs) to ensure continual improvement and professional training approaches in our metrology training. This session will use resources from three



Figure 1. Sample ANSI/IACET logo which we could apply to NCSLI content if we were an Authorized Provider.

[1] NCSL International (also known as National Conference of Standards Laboratories, International).
[2] American National Standards Institute, International Association for Continuing Education and Training (ANSI/IACET). http://www.iacet.org, 2010.

new NCSLI publications and their associated conference/section meeting presentations as *Application* examples throughout this paper. These publications include Recommended Practice (RP) 3, "*Calibration Procedures*", Recommended Practice (RP) 20, "*Metrology Laboratory Workforce Planning*" and the "*Metrology Human Resource Handbook*" (HR Handbook).

The ANSI/IACET criteria require organizations to use a systematic design and development process for developing all training materials. Most professional instructional designers follow some type of model, probably the most common of which is the ADDIE instructional system development (ISD) process. ADDIE refers to the Analysis, Design, Development, Implementation, and Evaluation phases of the ISD process. One of the unique features of the metrology community is that instructors are often subject matter experts (SMEs) without a formal background in ISD. Our overall goal with this paper and mini-tutorial is to provide guidance to the NCSLI technical committee members who are SMEs to develop training resources that follow a standardized practice, or model process, that will enable consistency in course development as well as compliance to the ANSI/IACET requirements.

We will cover two modules (with integrated Activities) during the mini-tutorial. The first module provides background information on the ADDIE instructional system development model and the other provides *Application* examples for each phase in the ADDIE model. However, this paper integrates the *Applications* with each topic as it is covered. We have also organized the mini-tutorial modules directly around the five Learning Objectives stated on the first page. We will reflect on the Learning Objectives as we cover this ISD model and as we apply the model to our three case studies.

One of the key things to consider in all adult learning events is that adults often preview your objectives or abstract to determine if there is something in your session for them. They ask the question "what's in it for me?" Adults juggle many priorities and their time is valuable. So, we can apply that concept, right now – why are you here? What is it in this particular session that you hope to get? What's in it for you? Why are you reading this paper? During the mini-tutorial, we will take some time to reflect on what aspects of the session are most important for each participant.

To keep this session most applicable, we have selected three case studies and are relying on the subject matter experts (SMEs) from the committees responsible for the content to help us ensure the content meets the needs of the participants who might receive training. So, our design process overlays these educational design concepts onto the technical content. We hope that this approach will serve as a useful model for speakers who want to ensure that ideas they present are *applied* in the workplace and that committee members who want to develop training material based on the technical content in guides, standards, and recommended practices are able to *follow* these steps to be successful in creating effective training materials. Our number one goal in training materials is to be able to reach a designated level of *knowledge* or *application.*

ADDIE Instructional Design Model

There are many instructional system development models and you can see it graphically presented in a number of ways. The Laboratory Metrology Group of the Weights and Measures Division, National Institute of Standards and Technology (NIST) have chosen this particular approach because it follows a Plan, Do, Check, Act (PDCA) model with Evaluation forming a part of every phase. We will work through this diagram (See Fig. 2) and each of the phases, starting with Analysis. Every instructional designer ends up tailoring this model to his own processes, projects, and approaches to developing training. "One cardinal rule is to never leave out Analysis or Evaluation from the learning event development process because the projects can be spotted quickly – 1) these efforts seldom work to meet learning objectives and 2) no one ever really figures out why."[3].

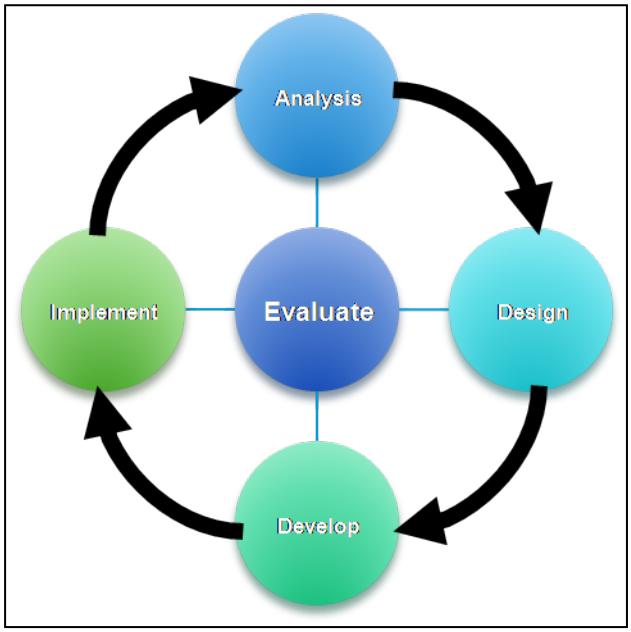


Figure 2. ADDIE Instructional System Development (ISD) Model. ADDIE: Analysis, Design, Development, Implementation, Evaluation.

There are a number of websites that cover Instructional Design concepts and the ADDIE model. Some additional references include:

- Hodell, Chuck, "ISD From the Ground Up, A No-Nonsense Approach to Instructional Design," ASTD Press, August 2006.
- Elengold, Linda J., "Teach SMEs to Design Training," ASTD Info-Line, Tips, Tools, and Intelligence for Trainers, 2001.
- Harris, Georgia L., "Development of a CD-ROM Metrology Course at NIST," Measurement Science Conference, 2003. It is available here: http://ts.nist.gov/WeightsAndMeasures/upload/MSC2003CDROMPaper.pdf

Defining the Audience and Need for Training

During the Analysis phase, the designer or, in most metrology cases, the instructor or SME defines the need, the target audience, and the expected outcome of the training. ANSI/IACET Criteria Number 4 is related to Learning Event Planning (4): "Each learning event is planned in response to the identified needs of a target audience." There is room on the Case Study Planning Worksheet (Appendix A) and Learning Event Planning Worksheet (Appendix B) to make notes about the Audience and Need for a given training event.

As a first step in Analysis, we need to answer a number of questions:

- Who is the audience?
- Why conduct the training?

[3] Hodell, Chuck, "ISD From the Ground Up, A No-Nonsense Approach to Instructional Design," ASTD Press, August 2006.

- What is the performance need?
- What is the root cause?
- How will the content be delivered and by whom?

We may need to answer these questions from the perspective of laboratory management as well as the metrologist or person being trained. We must have an effective partnership between the trainer, the manager, and the person being trained for the training to be effective and used/applied back on the job. If a manager does not support change that might be required for applying training content, the training will have no impact. Identifying the real need and the best solution are important for everyone.

One thing we might want to ask is: can other solutions meet the requirements without training? Sometimes when analyzing the need, we find that the root cause is lack of management support or lack of resources, rather than a lack of knowledge or awareness. Perhaps a simple publication and job aid such as a form or checklist serves an even better purpose than spending time in a training session. A step-by-step checklist or form may ensure consistent application of a new procedure, publication, or idea, without need for a training course.

If we look at the ANSI/IACET criteria for offering CEUs, one of the things we find is that we can also refer to a "job standard" to define the need for training. For example, any single item in the ISO/IEC 17025 standard for calibration and testing laboratories is rich as training content in the calibration world. One example might be a course on "Writing a Calibration Report (ISO/IEC 17025, Section 5.10."

Application: Identifying the Audience for our NCSLI Publications

- The audience for the mini tutorial is primarily Committee Chairs and Members who want to develop training material from NCSLI publications. There might be additional benefits to regular conference presenters or tutorial instructors who want to improve the instructional value of their resources.
- The audience for RP 3, "*Calibration Procedures*" might be: Calibration Laboratory Managers, Metrologists/Engineers, Technical Managers, or the Procedure Writing/Validation Team.
- The audience for RP 20, "*Metrology Laboratory Workforce Planning*" and the "*Metrology Human Resources Handbook*" might include: Laboratory Managers, Human Resources staff, and Training Managers/Directors.

Application: Examples of Need

- The need for this mini-tutorial is that SMEs need formal training on methodologies and processes for developing training material from NCSLI publications to ensure compliance with standard training methodologies and the ANSI/IACET requirements.
- The need for training on R P 3, "*Calibration Procedures*" could include: a requirement in ISO/IEC 17025 to document calibration procedures and validate them.
- The need for training on RP 20, "*Metrology Laboratory Workforce Planning*" and the "*Metrology Human Resources Handbook*" include: a desire for international consistency and adoption of standardized job descriptions to enable recognition and professional status of metrology careers.

Learning Objectives

A Learning Objective or Learning Outcome (often interchangeably used), is a specific statement, written from the participant's perspective, which provides information about what the participant will gain during a learning event. They are focused on participant performance, not teacher performance.

"Learning objectives: Statements about what a student will gain from a course or activity. These are specific statements about exactly what a student should know, be able to do, or value as a result of accomplishing a learning goal. Learning objectives form the basis for curriculum and course development as well as testing (Reed, 2005)."[4]

The "Bloom's to Assessment" graphic (Fig. 5) and the Learning Event Planning Worksheet (Appendix B) are two tools that will help implement these concepts. They will help answer "what" and "why" of our learning event. Part of the Analysis phase helps determine what level of training and comprehension is required by the audience. Then, the Design process requires that we design training at the level needed to help the participant get what they need at the right level.

Bloom's Taxonomy

We will consider these six levels of understanding before we consider writing effective Learning Objectives. We need to answer what level we want the participant to be able to know and apply the material. We must accurately identify the audience, understand their level of knowledge, and their unique needs. Each of the six areas in the taxonomy builds on the previous level of knowledge. A key design and development concept is that a participant must have Knowledge about a topic before they can Analyze it. In Table 1, the six areas noted in the Bloom's graphic (Fig. 3) are listed, with a brief description of each category, and a list of verbs that can be used to describe what the participant

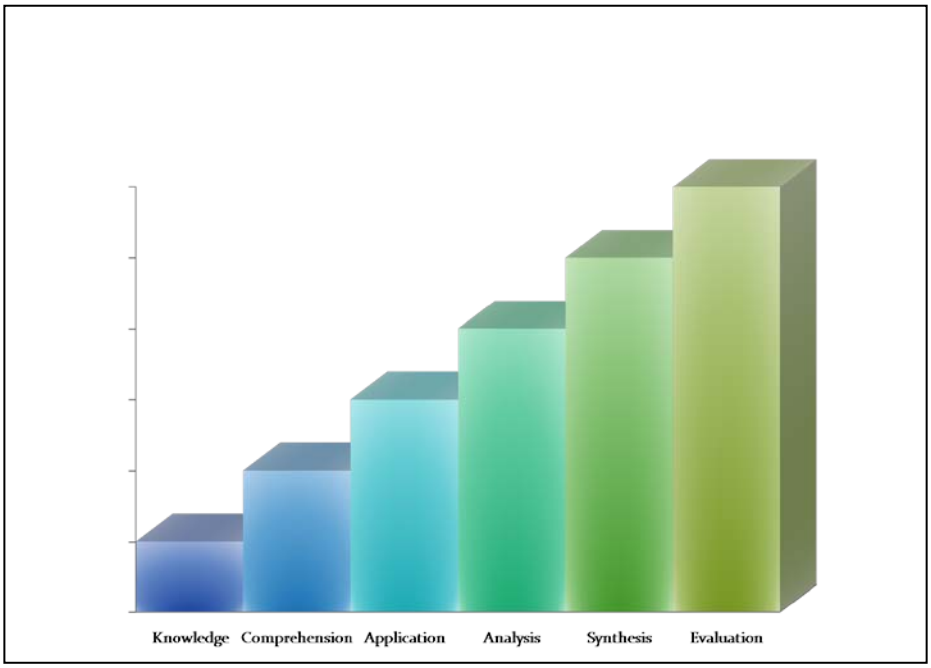


Figure 3. Bloom's Taxonomy Model.

[4] From the University of Texas at Dallas, glossary: http://sacs.utdallas.edu/sacs_glossary (March 2010).

will need to be able to Know, Do, or Think after the session. These sample verbs provide examples that can be used to reflect appropriate learning levels in each Learning Objective and to specify the level of mastery expected for the student.

Table 1. Bloom's Taxonomy - Descriptions and Sample Verbs.

Level	Description	Sample Verbs
Knowledge	Recall data or information	describe, identify, recall, arrange, define, duplicate, label, list, memorize, name, order, recognize, reproduce state
Comprehension	Understand the meaning of a problem, be able to translate into own words	comprehend, give example, classify, describe, discuss, explain, express, identify, indicate, locate, recognize, report, restate, review, select, translate
Application	Use a concept in a new situation	apply, change, construct, compute, choose, demonstrate, dramatize, employ, illustrate, interpret, operate, practice, schedule, sketch, solve, use, write
Analysis	Can split concepts into parts and understands the structure	analyze, break down, relate, appraise, calculate, categorize, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, make inferences, find evidence, test
Synthesis	Produce something from different elements (e.g., a report)	summarize, arrange, combine, categorize, assemble, collect, compose, construct, create, design, develop, formulate, manage, organize, plan, prepare, propose, set up, write
Evaluation	Make judgments, justify a solution	appraise, interpret, argue, assess, attach, compare, defend, estimate, judge, predict, rate, core, select, support, value, evaluate, prove, deduct

How to Write Learning Objectives

The ANSI/IACET standard for continuing education units identifies four categories in Section 5 related to writing Learning Objectives. These are the four criteria required for writing an effective Learning Objective.

1. They are written from the perspective of the learner, reflecting what the learner will achieve.
2. Learning objectives must be clear, specific, concise, and measurable (with four components):
    a. They state the performance the learner should be able to accomplish. (Behavior)
    b. They specify the conditions under which the learner is to perform. (Conditions)
    c. They specify the criteria for acceptable performance. (Criteria)
    d. They are directly related to the subject matter and content of the learning event.
3. Learning outcomes are established for each session within a l arge event, conference, or convention.
4. Instructional delivery includes discussion of learning outcomes.

If we expand on category number 2, and consider the four components of a clear, specific, concise, and measurable objective, here are some additional notes to clarify what is meant. Each Learning Objective should begin with: After this session (tutorial, paper, or workshop) the participant will_____.

Component 1: This component covers the expected behavior after the training. Think about performance in terms of active verbs related to what you want the participant to know, do, or be, after the training: identify, calculate, assess, present, analyze, and apply. (Refer back to Table 1 for additional examples.) At this point, select an appropriate verb for the level of knowledge or application that is expected.

Component 2: What are the conditions? Can the participant use their notes? Can they use a documented procedure? Can they use a calculator? Are computers allowed? Must they use Excel for calculations? Are there additional reference materials provided? Will they have to be assessed from memory?

Component 3: What criteria will be used to judge acceptable performance? Is an 80 % passing grade acceptable? Would it be okay if they submit their response in text-message format? Must they provide a written response or can it be oral? What will a valid uncertainty statement look like? (Instructors need to make sure that the criteria for successful performance are covered in the course!)

Component 4: Learning objectives must be directly related to the subject matter and content of the event. If you haven't covered various types of statistical distributions in a course, you should not evaluate students against the criteria (unless of course it was given as a prerequisite). If a course is to cover how to correctly perform pressure calibrations, it would not make sense to have Learning Objectives related to the laboratory management system. This component should be obvious – but must be stated.

Another approach commonly used is the A-B-C-D approach to writing Learning Objectives. A, B, C, and D stand for Audience, Behavior, Condition, and Degree. This approach matches up nicely with the ANSI/IACET criteria, in that the objective must focus on the Audience, and be written from the student perspective. Then, it needs to specify what Behavior is expected as a result of the training, must address the Conditions that will be allowed, and the Degree or level of mastery required (the Criteria for measuring successful mastery). We may not use this model in this tutorial, but you might see it in some references on this topic and the approach may be helpful to you.

Developing Learning Objectives for our *Application* examples are next. You can see that we have included the Behavior, Condition, and Criteria in these examples. Note how you might improve or expand on ideas for appropriate Learning Objectives.

Application: Examples for NCSLI Publications

- Five Learning Objectives for this mini tutorial were stated earlier on page 1.
- Objectives for RP 3, "*Calibration Procedures*" might include: given resources and examples (*condition*), participants will be able to correctly (*criteria*) write, assess

(identify good procedures, identify gaps and weaknesses), and validate procedures (*behavior*).

- Objectives for RP 20, "*Metrology Laboratory Workforce Planning*" might include: given the resources (*condition*), participants will be able to describe the overall workforce planning process (*behavior*), and successfully implement all or portions of (*criteria*) laboratory succession planning efforts (*behavior*), etc.
- Objectives for the "*Metrology Human Resources Handbook*" might include: given the resources (*condition*), participants will be able to update job descriptions (*behavior*) consistent with standard practice (*criteria*), collect employment data (*behavior*) according to standard classifications (*criteria*), participate in providing input to OPM/Department of Labor, etc.

How to Select and Align Activities and Assessments with Learning Objectives

The triangle shown in Figure 4 represents the relationship between Learning Objectives, Learning Activities and Assessment. If these three components are present and compatible then teaching and learning is enhanced, hence, this model is often called "The Magic Triangle." If these three components are not congruent then students become discouraged and unhappy and make the assumption the objectives cannot be trusted and they will stop paying attention to them. A key factor to consider with this model is that if one side of the triangle is missing, the learning collapses and is not effective.

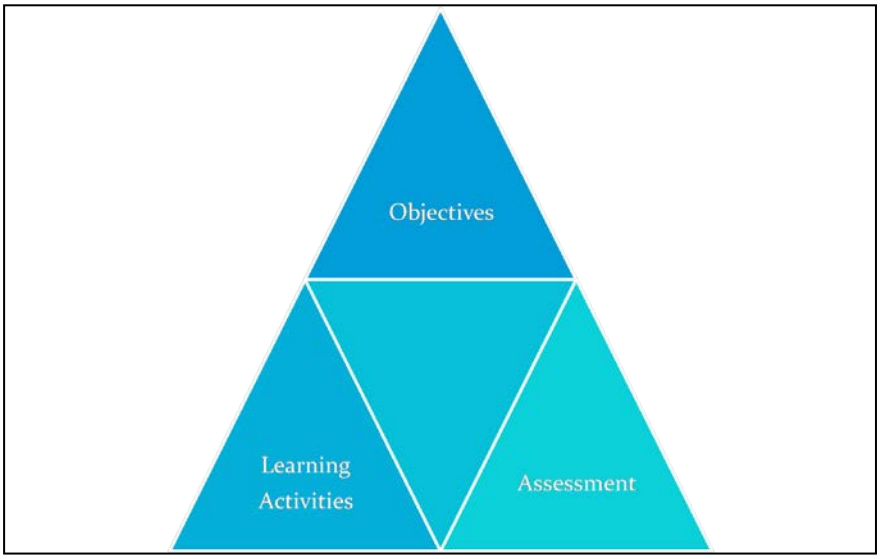


Figure 4. "The Magic Triangle." Used to align Learning Objectives, Activities, and Assessment Methods.

Note: Learning Activities are those things the instructional designer plans during the Design Phase and the student does to learn in the Implementation Phase. For example, listening to a lecture is a Learning Activity; engaging in a small group discussion led by a facilitator is a Learning Activity; evaluating a measurement instrument with a calibration technician clinician is a Learning Activity.

Evaluation or Assessment (of the student, not the course) is often thought of as a *testing* component. But, Assessment could also be a project assignment that is graded or otherwise evaluated. The important factor to consider is that whatever forms the Assessment takes, it

should measure the student's accomplishment and provide specific feedback to the student(s) on how well they met the Learning Objectives.

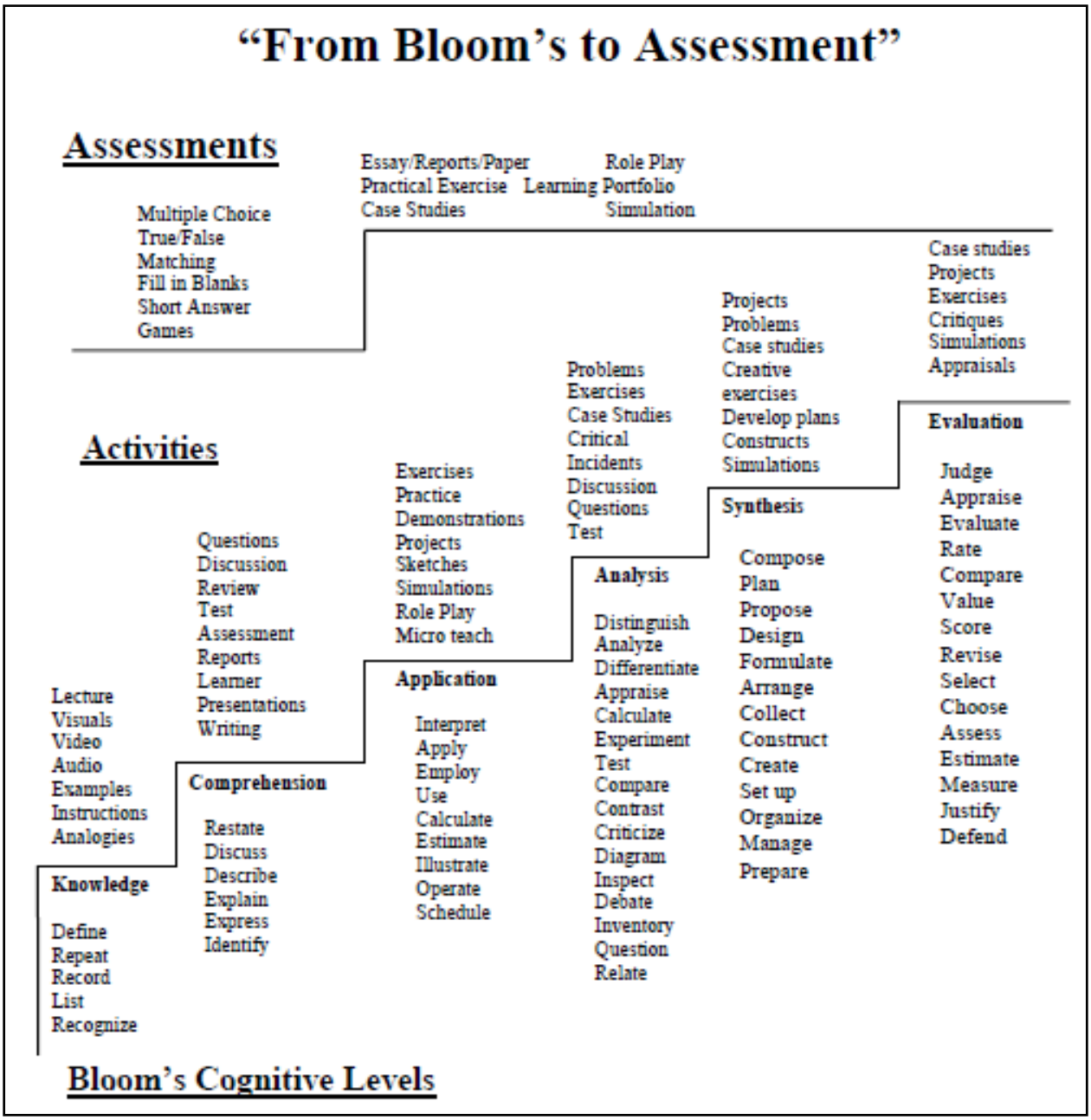


Figure 5. From Bloom's to Assessment.

If you review the "Bloom's to Assessment" graphic (Fig. 5), you can see that there are some activities more appropriate for some levels of learning than others. E.g., a Lecture/Test might be appropriate Activity and Assessment for the Knowledge level learning, but it is usually the lowest level of engagement and retention. A Case Study Activity and Assessment are more appropriate for the Application and Synthesis levels. The concept of the Magic Triangle (Fig. 4) should be considered when using the Learning Event Planning Worksheet (Appendix B) that we will also discuss later. Keep this idea in mind: the Objective, Activity, and Assessment

components are all a part of the triangle, all are essential, and all must be considered during the Design process. They must be selected to match the appropriate level of Bloom's taxonomy.

Designing Content

ANSI/IACET Criteria 7 states that: the content and instructional methods are appropriate for each learning outcome; content is organized in a logical manner in support of learning outcomes; instructional methods are consistent with learning outcomes regardless of delivery mode; and instructional methods accommodate various learning styles and are designed to promote interaction between and among learners, instructors, and learning resources to achieve the stated learning outcomes.

Depending on what topic is being converted to training material, a trainer might design around themes, chronology, or steps in a measurement process. It is important to make sure that topics are aligned around the objectives and to focus on ensuring that the technical content is effective as training material. Using a logical sequence of topics is one of the ANSI/IACET criteria and is important for training course development. One topic should typically build on the knowledge gained from previous topics or modules.

In this mini tutorial we are taking PowerPoint®[5] slide content that is "about a publication" and converting it to a "training resource." If the content were not available, we would have to start from scratch and design and build everything. Our focus is to convert the content in such a way as to comply with recognized ISD education and training models.

Techniques, teaching methods, or activities need to be selected and aligned for each of our Case Studies to match the Bloom's Taxonomy level we want to achieve, as well as the KSA (Knowledge, Skill, Ability) we are trying to ensure the participant can KNOW or DO at the conclusion of the session. What are the best instructional methods that are likely to be used during the Implementation phases? Instructional designers must think about best instructional and Assessment methods during Analysis and Design to select the best activities and methods for teaching. They must also consider the best Assessment methods. Table 2 lists several examples of Teaching Activities/Methods.

A traditional model of training that combines Activity and Assessment is Lecture, followed by a Test. In a conference setting, we often only see Lectures. As you can see by reviewing the "Bloom's to Assessment" graphic (Fig. 5), this approach is not very effective if you want participants to know or do something different. What makes it worse is that adults prefer to be involved in their learning and tend to hate the Lecture/Test model. What comes to mind is "death by PowerPoint!" This approach provides the lowest level of engagement and retention and treats the audience as inexperienced/non experts (though they usually do bring *something* to the learning event). During the Analysis and Design phase we must answer whether we want people to only be able to LIST information or be able to fully ANALYZE and APPLY the material on the job. In most cases, we want to see performance improvements on the job and not simply improve a participant's knowledge.

[5] The use of specific software products is not intended as an endorsement; it is simply the products that are commonly used in the development of training resources.

Table 2. Teaching Activities/Methods.

Activity or Method	Description
Lecture	Presents factual material in a direct logical method. Useful for large groups. Should only be used in combination with other instructional techniques, unless there is a very inspirational instructor and the goal is to inspire learners. Lectures must include liberal use of visual, auditory, and kinesthetic (physical activity) approaches. Lectures are often passive and learning is generally at the lowest end of Bloom's taxonomy.
Video	Can be entertaining if selected and done well. Video can be used as part of an Activity, but additional instructions need to be included, such as "watch this video and take notes on the measurement errors you observe."
Discussion	Discussions are often started by asking open-ended questions and engaging all participants. They can be done in large groups, small groups, or as brainstorming sessions. The idea is to engage all participants. It is not practical for very large groups unless there is an option for breaking into smaller groups and reporting back.
Demonstration	In this method, the instructor or a member of the class might demonstrate a procedure or method to the rest of the class. Participants are given an idea of what something might look like in practice and have the opportunity to observe, ask questions, and critique.
Exercise/Drill	Perform a measurement procedure or review a specific procedure is an example of an exercise/drill activity. Exercises provide immediate opportunities to apply what has been learned. Students individually perform an experiment and then come together as a class to discuss the results. The hands-on application of a procedure and final expected results are often assessed.
Case Study	Case studies are practical examples related to the content that must also be relevant to the participant. Allows for application of content that has been learned and promotes analytical and problem solving skills. The case study must be complete enough for the participant to assess the entire case versus having too many unknown components that might simply frustrate the students (especially if the right answer is more fixed than students are led to believe).

Application: Selecting Activities

To convert our technical content to training materials, we need to have some creative planning. Having a team of designers or instructors select energetic and applicable Activities can be an art. This phase is often quite a challenge for no-nonsense SMEs for whom the content is obvious and comes easily. During the design process we need to answer: What kind of activities will help participants understand, implement, analyze at the levels needed? We have selected some Activities for our Case Studies below. Can you identify additional Learning Activities that might be fun, engaging, and effective?

- Activities for this mini tutorial. We are making extensive use of real case studies from new NCSLI publications. These provide real examples of what we are trying to do.
- Activities for RP 3, "*Calibration Procedures*" might include: provide a procedure with parts missing – identify missing parts and consider the impact if they are not present; provide a procedure that is poorly written or unclear and consider the impact; provide a well written procedure, and consider what is needed to document the validation.
- An Activity for RP 20, "*Metrology Laboratory Workforce Planning*" might include: perform a knowledge/skills/ability Assessment for participants (make it real for each

person) to answer the question, what would be required for succession planning to fill your own position.
- An Activity for the "*Metrology Human Resources Handbook*" might include: bring your own set of job descriptions to the course to assess them against the Handbook criteria.

How to Ensure Learning Takes Place–Assessments

Activities and Assessment methodologies must be considered in the context of Design, but the instructional designer must consider how they will be Implemented for each audience. The ANSI/IACET Criteria 8 specifies that Assessment must take place. Procedures established during event planning [Design, Development] are used to assess student's achievement of the learning outcomes. Learners must also be provided feedback on their mastery of learning outcomes. During development we will develop the instructional content, but we must consider good design approaches in the Design phase. Later, Implementation also includes the Activities, and Assessments of whether students have mastered the topic at the expected or desired level.

It is important to align the Assessment method with the Learning Objective and Activity as shown in the Magic Triangle (Fig. 4) and the "Bloom's to Assessment" graphic (Fig. 5). For adult audiences, it is important to integrate Assessment into the training as much as possible (versus issuing a post-test). According to the ANSI/IACET criteria, each person does not have to be assessed on achieving each objective in a course, but sometimes that is important for issuing certificates of successful completion or for demonstration of competency. For example, if you have objectives such as "each person will successfully calculate the standard deviation and get 100 % correct" or "each person will successfully calibrate item x during the seminar." In those examples, the instructor will need to be able to review each person's numbers or measured result to assess accuracy and achievement of the objectives, and also to provide feedback to the student. Sometimes there is also a need to assess post-event learning and application – e.g., use of proficiency testing for procedure training.

To improve Assessment efficiency, and to motivate and engage students, it is important to provide group feedback to let them know what you learned from the Assessments and what difference that information will make. All Assessments need to reflect back to measurable Learning Objectives to determine if the student has learned the material and it is important to provide feedback to the student so that they know whether they have learned the material correctly. That is, Assessment should be more than simply correcting a quiz and returning it with a grade. Table 3 provides a number of Assessment Methods that may be considered.

Table 3. Assessment Methods.

Assessment Method	Description
Multiple Choice	A type of quiz or Assessment where the student must choose either the best answer or a number of answers that might be correct. Immediate review can be done to provide feedback. Discussion of "wrong" items often yields interesting applications that might not have been considered during the Analysis, Design, and Development phases.
True False	This is a simple type of quiz or Assessment that can be done orally or on paper. It can be done individually or in a large group setting. Right and wrong answers are usually provided. It can be done by raising of hands. E.g., how many of you think this statement is True? How many false? Can anyone give me a reason for their answer? Feedback might be as simple as "great job" or "here's the correct answer."
Fill in Blanks	This type of approach can be done in a group setting and handled orally, or even in teams. Most often it is used in a written test and will usually only have one right answer.
Essay/Reports	It is more difficult to assess essays/reports in a training session unless it is several days long and the instructor will have time to review and grade the content. Specific guidance may be needed in the Developed material to ensure that an instructor or facilitator knows the content adequately or has adequate information on which to base evaluation. A "one minute" Assessment can also be useful. For example, "write down one thing you learned [and can apply] during this session on this index card and pass it in."
Simulation	The Assessment is made in each participant's engagement, completion, and accuracy of the Learning Objectives and at the level of knowledge required. Job task analysis can help create an observational checklist.
Case Study	The application of a procedure and final expected results are often assessed. Group review of the final results can provide dynamic feedback or individual feedback may be provided to each participant. Teachers can use a checklist and observation to assess student success with the particular material. A minimum set of knowledge or skills can be included on the checklist. Job task analysis can help create an observational checklist.
Role Play	Specific guidance is given to the parties in the role-play and then observations and feedback from the group are collected. The instructor provides an overview of the Activity and summarizes the important components. Participants are encouraged to practice a role or skill. Teachers can use a checklist and observation to assess student success with the particular material.
Journaling	Students are asked to take specific notes during the session. For example, "write down one key idea from this session and write down one thing you can apply back on the job." The summary notes are reviewed at the end of the class either as a group or individually. The notes can also be used to summarize or highlight the important aspects of what was learned to a manager or coworker back on the job.

The Case Study Worksheet (Appendix A) and Learning Event Planning Worksheet (Appendix B) use tables that can be expanded like the one shown in Table 4. These worksheets can be using during the Design phase to consider effective methods in training resource development. But, this specific portion of the worksheets (Table 4) helps align the Learning Outcomes with the

Activities and Assessment methods to ensure that all three sides of the Magic Triangle (Fig. 4) are aligned according to the "Bloom's to Assessment" (Fig. 5) and that the instructional materials and methods will be effective. If Assessments are integrated into the Activity effectively, students may not realize whether they are learning or being assessed.

Table 4. Example Learning Outcomes, Instructional Methods, and Assessment Methods.

Item	Learning Outcome	Instructional Method (Activity)	Assessment Method

Application: Matching Assessments to Activities and Learning Objectives

- Activities and Assessment for this mini tutorial. We are making use of real case studies and reviewing possible *Applications* as we cover each Phase. Assessment will be done by evaluating the levels of participation and questions raised by participants. Feedback will be given during the session. Follow up Assessment will be done to determine the level at which new training materials comply with the ADDIE model and ANSI/IACET criteria.
- Activities for RP 3, "*Calibration Procedures*" might include: provide a procedure with parts missing – identify missing parts and consider the impact if they are not present; provide a procedure that is poorly written or unclear and consider the impact; provide a well written procedure, and consider what is needed to document the validation. In this case, was the participant able to identify missing items in a calibration procedure? This could be done through group discussions and a presentation with feedback from the facilitator. Assessing impact would be much more difficult as an Activity and one might question whether there is a list of key items one might consider in assessing the impact of poorly written calibration procedures. The content of the Assessment material must be covered in the training.
- An Activity for RP 20, "*Metrology Laboratory Workforce Planning*" might include: perform a knowledge/skills/abilities Assessment for participants (make it real for each person) to answer the question, "What would be required for succession planning to fill your own position?" If an Activity included discussion of each phase in Succession Planning, and the Learning Objective was to list three of the five phases, an oral examination, or team competition, might be used to assess whether the participants understood the topic at the level expected.
- An Activity for the "*Metrology Human Resources Handbook*" might include: bring your own set of job descriptions to the course to assess them against the Handbook criteria. However, the objective might have been to be able to list the three job titles that are in the handbook. In that case, a quiz at the end could determine if the participant is able to list all three job descriptions. A matching quiz could be used to match attributes with each job title.

Developing a Lesson Plan, Agenda, Instructor's Resources

Once the course content is Designed, the course materials are Developed. Content that is developed might include an Agenda, Lesson Plan, Slides, Visual Aids, and Instructors Notes. It should also include any additional handouts or case study references that are not included as a part of the course reference materials. For example, in this mini-tutorial, we provide: a copy of this paper, copies of PowerPoint slides from the three Application examples, and additional References on a CD-ROM. We are also providing a set of PowerPoint slides (Notes version) and a paper copy of Appendix A for personal notes during the session. We are intentionally providing the Notes version because our time will be limited and we want to encourage participants to share this resource within their committees or with others who are developing training resources. Our goal is to encourage participants to implement the content at the Application level of Bloom's Taxonomy. You will note that this goal was not stated as a Learning Objective, but is an outcome of the training that we hope will be fulfilled.

The agenda for the mini-tutorial includes:

- **Overview of the Session** (including Learning Objectives). We will ask participants to take notes on their own project or use the Case Study we will discuss.
- **Module 1:** ADDIE ISD Process/Theory. This is presented as Lecture with Group Oral Assessment.
- **Module 2:** ADDIE Process – Applied to One Case Study (the RP on Calibration Procedures). (Note: this paper provides references to three Applications, but there is not time to cover all three examples during the session; however, they are included in the Notes section of the slides/handouts.) The Five Steps of Adult Learning (Metrologist, July 2010) will be implemented as a part of the teaching/Activity. Assessment will include review of participant engagement. Are the questions applicable? Are groups interacting? Are new, creative ideas raised?

For a mini-tutorial that is presented in one and a half hours, we are not planning for any breaks. However, we want to cover the Overview and Module 1 fairly quickly so that we can ensure we spend the majority of our time on the *Applications* (Case Study). An estimated time might be 15 minutes for an Introduction and Overview, 30 minutes for Module 1, and 45 minutes for Module 2.

In general, PowerPoint® provides a Notes section that can be used for instructor guidance and reference. During the Development, and Implementation phases, it is important to ensure that the notes and content are enough for a knowledgeable and skilled instructor or SME to present the content. What else might be needed? Are the case studies included? Will there be a compiled handout for participants as well as instructors? What qualifications are needed (if any) for the instructor/facilitator? The instructor must have a background in the instructional design process, but because the process is fairly simple and the notes fairly complete, a good instructor could feasibly review the materials and facilitate the implementation with knowledgeable SMEs. In fact, the content for this mini-tutorial could easily be shared by an effective Committee Chair to the rest of their Committee to guide the development of new training resources.

Implementation and Evaluation

Implementation and Evaluation are the last two phases of the ADDIE model. It is arguable that Evaluation is last because we integrate it into each level of the process. It is beneficial to conduct dry-run evaluations and obtain feedback (beta testing) with instructors or SMEs to ensure the needs and objectives of the training material will be met. Adjustments in the content will often be made as the material is developed – and before the course is presented. Course evaluations and continual improvement (refinement) of content, objectives, activities, and Assessments also help to improve content over time.

Having an evaluation program that includes overall assessment of all program components, as well as individual course evaluations, is an essential part of the ANSI/IACET criteria, but we will not spend time on those phases during the mini-tutorial. This is not to minimize their importance as a part of the ADDIE process as much as it is related to the need to focus on Designing and Developing content in the available time. Recall what we said earlier: a cardinal rule is to never leave out Analysis or Evaluation from the learning event development process because the projects can be spotted quickly – 1) these efforts seldom work to meet learning objectives and 2) no one ever really figures out why."

Conclusions

This paper is being presented as part of a mini-tutorial to help metrology subject matter experts design and develop training content that follows formal ISD models and to help comply with ANSI/IACET standards for Authorized Providers in NCSLI-developed training resources. The authors hope that this resource will be expanded and enhanced for use by NCSLI committees in the Analysis, Design, Development, Implementation, and Evaluation of training resources as well as used as a resource for converting or developing effective metrology training content.

Acknowledgements

The authors wish to acknowledge contributions from the Committee Chairs/Co-chairs (committee number provided), Gloria Neely (163), Caroline Dixon (163), and Thomas Flynn (176) for providing PowerPoint® slides related to each of their new publications and for participating in a preliminary webinar on these topics to provide subject matter guidance, Application examples, and feedback on the draft mini-tutorial presentations.

Appendices and References

- Appendix A: Case Study Planning Worksheet
- Appendix B: Learning Event Planning Worksheet
- Metrologist Articles: CEU (April 2009), Train the Trainer: Writing Learning Objectives (April 2010), 5 Steps for Adult Learning (July 2010), Activities and Assessments (October 2010, draft)
- NCSLI Website: Trainer Resources: http://www.ncsli.org/NCSL/learning/Trainer_Resources.aspx

Appendix A
Case Study Planning Worksheet

Title of Course/Tutorial:_____

<table>
<tr><th>ADDIE Phase</th><th>Questions and Notes</th></tr>
<tr><td>Analysis</td><td>What is the need?

Who is the audience?

What standards might be referenced?

What will success look like?</td></tr>
<tr><td>Design</td><td>Write Learning Objectives:

Using _____, participant will be able to _____ (at this level_____) after the training.

Level in Bloom's Taxonomy?

Possible VERBS?

Match Activity – Align Assessment Method
What are some possible activities and Assessments that can be used?

<table><tr><th>Learning Objective</th><th>Activity</th><th>Assessment</th></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table>

Tools: Learning Event Planning Worksheet, "Bloom's to Assessment", Writing Learning Objectives Article</td></tr>
<tr><td>Develop</td><td>Creating content…
Teacher's Manual. Slides. Case Studies.
Often slides…. (or outline/notes)

Additional handouts? Worksheets? Case studies?

Additional considerations: Instructor notes. Agenda. Lesson Plan. Timing/breaks. Constraints.</td></tr>
<tr><td>Implement</td><td>Step 1: Set up the Activity.
Step 2: Conduct the Activity.
Step 3: Learners share and interpret their reactions.
Step 4: Participants identify concepts.
Step 5: Participants consider and share how they will apply these concepts.

Tools: Five Steps of Adult Learning</td></tr>
<tr><td>Evaluate</td><td>1. Evaluate each phase of the ADDIE process.
2. Participant Assessment Methods.
3. Use of standard course evaluations.

Tools: Learning Event Planning Worksheet, "Bloom's to Assessment"</td></tr>
</table>

Appendix B
Sample Learning Event Planning Worksheet (used for Analysis and Design Phases)

Title:

Abstract:

Constraints:

- Instructor:
- Time/Date:
- Length of course:
- Prerequisites: (e.g., previous course, downloadable reading, tasks/activities)
- Maximum number of students:
- Minimum number of students:
- Room set up:
- AV Required:

Define the audience and need for this training (e.g., laboratory management knowledge, skill, ability, standards such as ISO/IEC 17025, 17043, VIM, GUM, measurement parameter knowledge, skill, ability to perform calibrations, poor performance on proficiency tests, observed/requested needs):

Complete this table for each course/event:

Learning Objectives[6]	Instructional Method (Activity)[7]	Assessment Method[8]

Agenda Outline (Include highlight agenda items and attached detailed agenda and descriptions.)

[6] Note Bloom's Taxonomy and write from the Learner's perspective… e.g., At the end of this session, the learner will be able to use "x" tool to comply with section "y" of "q" standard; will be able to name the benefits of complying with the standard; will be able to tell others how to select the best tools from choices given to implement a program. This is NOT where the instructor says "here's what we're going to cover." Suitable activities and Assessment methods are to be used to ensure participant learning at the desired level.

[7] Think about Instructional methods and Learning activities. What are the Visual activities: observing slides, watching list of notes, demonstrations of documents, watching a measurement, watching a video, reading a procedure. What are the Auditory cues: lecture, discussion, question/answer, round the room sharing, brainstorming, and role-playing? What are the kinesthetic activities: making a measurement, taking time to reflect and write notes – journaling; sharing thoughts; reviewing and summarizing a document; note taking that includes key questions (and can be used for learner Assessment). Activities must be matched with Assessment method and Learning Objectives.

[8] Think about how to provide immediate Assessment and feedback to adult learners and consider the Five Steps of Adult Learning. After a question directed to the group (whether they answer aloud or in writing), provide the right answer. Use a quick daily/hourly Quiz. Use a Q&A approach and provide answers. Ask individual participants to share their answers or examples. Use a competitive game. Use role-playing and have participants provide feedback to each other. Give immediate feedback when creating a group list by brainstorming.

Topic	Time
Attendance, Group Introductions	
Course Title, Description, and Successful Completion requirements	
Learning Objectives	
Module 1 Objective, Activity, Assessment	
Module 2 Objective, Activity, Assessment	
Module 3 Objective, Activity, Assessment	
Review and Closure	
Course and Student Assessments	

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Report of the National Type Evaluation Program (NTEP) Committee

Randy Jennings, Chairman
Executive Assistant
Tennessee Department of Agriculture

Reference
Key Number

500 INTRODUCTION

The National Type Evaluation Program (NTEP) Committee (hereinafter referred to as "Committee") submits its report for consideration by the 96th National Conference on Weights and Measures (NCWM). This consists of the Interim Report presented in NCWM Publication 16 as amended in the Addendum Sheets issued during the Annual Meeting that was held July 17 - 21, 2011, in Missoula, Montana. The Committee considered communications received prior to and during the 96th Annual Meeting that are noted in this report.

Table A identifies the agenda and appendix items. The agenda items are listed by Reference Key Number, Item Title, and Page Number. The item numbers are those assigned in the Committee's Interim Meeting Agenda. A Voting item is indicated with a **"V"** after the item number or, if the item was part of the consent calendar, by the suffix "**VC**." An item marked with an **"I"** after the reference key number is an Informational item. An item marked with a **"W"** was Withdrawn by the Committee and generally will be referred to the regional weights and measures associations because it either needs additional development, analysis, and input or does not have sufficient Committee support to bring it before the NCWM. Table B contains provides a glossary of acronyms used in this report, and Table C provides a summary of the results of the voting on the Committee's items and the report in entirety.

This report contains many recommendations to revise or amend National Conference on Weights and Measures (NCWM) Publication 14, Administrative Procedures, Technical Policy, Checklists, and Test Procedures or other documents. Proposed revisions to the publication(s) 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 *italics*.

Note: The policy of the National Institute of Standards and Technology (NIST) is to use metric units of measurement in all of its publications; however, recommendations received by the NCWM technical committees have been printed in this publication as they were submitted and may, therefore, contain references to inch-pound units.

Table A
Index to Reference Key Items

Reference Key Number		Title of Item	Page
500		INTRODUCTION	NTEP - 1
500-1	I	Mutual Recognition Arrangement (MRA)	NTEP - 3
500-2	I	Mutual Acceptance Arrangement (MAA)	NTEP - 4
500-3	I	NTEP Participating Laboratories and Evaluations Reports	NTEP - 6
500-4	I	National Type Evaluation Technical Committee (NTETC) Sector Reports	NTEP - 10
500-5	I	Conformity Assessment Program	NTEP - 11
500-6	I	NTEP Contingency	NTEP - 15
500-7	I	Publication 14 – NTEP Administrative Policy	NTEP - 16

Appendices

Appendix A. NTETC Grain Analyzer Sector ..... NTEP - A1
Appendix B. NTETC Measuring Sector ..... NTEP - B1
Appendix C. NTETC Weighing Sector Meeting Summary ..... NTEP - C1
Appendix D. NTETC Software Sector Meeting Summary ..... NTEP - D1
Appendix E. NTETC Belt-Conveyor Scale Sector Meeting Summary ..... NTEP - E1
Appendix F. Mutual Recognition Agreement ..... NTEP - F1

Table B
Glossary of Acronyms*

BIML	Bureau of International Legal Metrology	IR	International Recommendation
CD	Committee Draft[1]	MAA	Mutual Acceptance Arrangement
CIML	International Committee of Legal Metrology	OIML	International Organization of Legal Metrology
CPR	Committee on Participation Review	MC	Measurement Canada
DD	Draft Document[2]	R	Recommendation
DR	Draft Recommendation[2]	SC	Subcommittee
DV	Draft Vocabulary[2]	TC	Technical Committee
DoMC	Declarations of Mutual Confidence	UT	Utilizing Participant
IP	Issuing Participant	WD	Working Document[3]

[1] CD: a draft at the stage of development within a technical committee or subcommittee; in this document, successive drafts are numbered 1 CD, 2 CD, etc.

[2] DD, DR, DV: draft documents approved at the level of the technical committee or subcommittee concerned and sent to BIML for approval by CIML.

[3] WD: precedes the development of a CD; in this document, successive drafts are number 1 WD, 2 WD, etc.

* Explanation of acronyms provided by OIML.

Table C
Voting Results

Reference Key Number	***House of State Representatives***		***House of Delegates***		***Results***
	Yeas	***Nays***	***Yeas***	***Nays***	
500 (In its entirety) voice vote					Passed

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

500-1 I Mutual Recognition Arrangement (MRA)

Background/Discussion: The MRA between Measurement Canada (MC) and the National Type Evaluation Program (NTEP) labs originated April 1, 1994. Since that time, the original MRA has expanded, and a second MRA covering measuring devices has been developed. The MRA pursuant to weighing devices will expire in January 2011, and the MRA for measuring devices will expire in July 2011. The NTEP Committee and members of the Board of Directors have been actively engaged with MC over the past two years to develop a new agreement that will continue our relationship with MC by formalizing an updated MRA that meets the needs of both the NCWM and MC, and includes both weighing and measuring devices in one document.
The scope of the current MRA's includes:

- gasoline and diesel dispensers;
- high-speed dispensers;
- gasoline and diesel meters intended to be used in fuel dispensers and truck refuelers;
- electronic computing and non-computing bench, counter, floor, and platform scales with a capacity up to 1000 kg (2000 lb);
- weighing/load receiving elements with a capacity of up to 1000 kg (2000 lb);
- electronic weight indicating elements (except those that are software based, i.e., programmed by downloading parameters); and
- mechanical scales up to 10 000 kg (20 000 lb).

As part of this evaluation process, the NTEP Committee was asked to consider expanding the MRA to higher capacity scales. The NTEP weighing labs agreed that expanding the MRA should be considered and MC expressed willingness to consider a proposal from the NCWM. The NTEP Administrator opened communication with MC with a recommendation to expand the MRA to include electronic platform scales up to 14 000 kg (30 000 lb). The current limit is 1000 kg. If the limit was expanded to just platform scales (i.e., not including hoppers, OBWS, IIIL), it appeared the only addition to what is required during an evaluation would be the field permanence test criteria (Pub 14, DES Sections 62.22., 63.7., 64.3., and 64.4.). Upon discussion with MC type evaluation personnel, other issues surfaced: a) MC tests some weighing elements up to 10 000 kg in the lab, applying influence factor requirements (power, temperature, EMI, etc). There is a size limit of 1.6 m x 1.6 m. NTEP has a lab test limit of 1000 kg and some of the chambers will not accommodate the larger weighing elements; and MC does not apply the minimum 20 day use limit for field permanence tests to field performance tests for "cost factor" reasons (i.e., they want to avoid a second visit to the site). MC initially had a 20 day use requirement. But replaced it with a 300 weighments test at half capacity and acquired equipment to have the permanence test conducted in their laboratory. Based upon this information, taking the current workload of the weighing labs and current economic conditions into consideration, NTEP does not plan to move forward with the expansion of the MRA to include larger capacity weighing devices at this time. Additionally, U.S. manufacturers requested that the Committee consider expanding the MRA to include Automatic Weighing Systems (AWS) and Multiple Dimension Measuring Devices (MDMD). The requests were discussed by the MC and the NCWM Board members. Expansion to include AWS was deemed inappropriate at this time because of significant differences in requirements. The inclusion of MDMD is under consideration. NTEP is working to identify differences between the United States and Canada technical requirements and test procedures.

At the NCWM Annual meeting in July 2010, the NCWM Chairman and Chair-elect as well as the NTEP Chair and Administrator met with Measurement Canada (MC) President and Vice-President and it was agreed to consider possible expansion of the MRA for multiple-dimension measuring devices (MDMD). It was also agreed that further information was needed before a decision could be made on such an expansion.

The NTEP Committee was asked to identify the differences between Canadian and United States requirements, procedures, and practices regarding the type approval evaluation of MDMDs. The NTEP MDMD Work Group began this task at the December 2010 meeting.

NTEP also requested that tests conducted at manufacturers' premises under the supervision of an NTEP evaluator be included in the scope of the MRA. MC expressed the desire to keep these evaluations outside the scope of the MRA for scales, load receiving elements, and electronic weight indicating elements.

In order to allow MC and the NCWM to review the NTEP MDMD work group analysis, MC President, Mr. Alan Johnston, and NCWM Chairman, Mr. Tim Tyson, signed a six-month extension agreement to the MRA for weighing devices at the Interim Meeting in January 2011.

The NTEP Committee continued working with MC to develop a new "combined" agreement and to explore the possibility of expanding the scope to include Multiple Dimension Measuring Devices (MDMD) and higher capacity scales. Technical obstacles have taken both MDMD and higher capacity scales off the table for now, but NTEP and MC remain committed to continue to discuss expansion.

NTEP also requested that tests conducted at manufacturers' premises under the supervision of an NTEP evaluator be included in the scope of the MRA. MC expressed the desire to keep these evaluations outside the scope of the MRA for scales, load receiving elements, and electronic weight indicating elements.

MC, NTEP, and all of our mutual stakeholders agree that the MRA is a benefit for the North American weights and measures industry. Therefore, the NTEP Committee was proud to see the signing of a new MRA on Tuesday, July 19th, by NCWM Chairman, Mr. Tyson, and Measurement Canada President, Mr. Johnston, that combines the weighing and measuring devices into one document and provides for continued cooperation between the two organizations and continuation of the beneficial partnership. The new MRA will be effective for five years. A copy of the signed MRA is included with this report, see Appendix F.

500-2 I Mutual Acceptance Arrangement (MAA)

Background/Discussion: Information regarding the International Organization of Legal Metrology (OIML) Mutual Acceptance Agreement (MAA) can be found at www.oiml.org/maa. The NCWM has signed the OIML MAA DoMC for R 60 Load Cells as a utilizing participant. A Utilizing Participant is a participant which does not issue any OIML Certificates of Conformity (CC) nor OIML Test Reports and/or Test Reports under a DoMC but which utilizes the reports issued by Issuing Participants.

The OIML Technical Subcommittee for TC 3/SC 5 "Conformity assessment" is revising the following OIML B documents that are classified as Basic Publications:

- OIML B 3, "OIML Certificate System for Measuring Instruments;" and
- A combined revision of OIML B 10-1, "Framework for a Mutual Acceptance Arrangement on OIML Type Evaluations," and OIML B 10-2, "Checklists for Issuing Authorities and Testing Laboratories carrying out OIML Type Evaluations."

A 2 CD of B 3 and a 1 CD of the combined B 10 revision were distributed to TC 3/SC 5 "Conformity assessment" in December 2009. Comments were requested by April 30, 2010, in advance of a TC 3/SC 5 meeting planned for October 2010.

Plans to revise the OIML B 3 and B 10 documents are proceeding (the present revision will not incorporate the inclusion of test data from MTLs into B 10, but will keep it in B 3). It has recently been clarified by a TC 3/SC 5 member who wants to include test data from Manufacturers Testing Laboratories (MTLs) into B 10 that the data is not obtained under "unsupervised" conditions, but rather under conditions of "controlled supervision," meaning that, at a minimum, 1) a thorough review of the manufacturer's quality system has been performed; 2) the manufacturer has an independent testing laboratory that reports to the highest management level of the organization; 3) the Issuing Authority must be notified before any type approval tests are begun; 4) the Issuing Authority must be allowed to observe any and all testing on a short-notice basis; 5) the Issuing Authority is entitled to repeat any tests that it deems necessary, either at the manufacturing facility or at its own laboratory, at the manufacturer's expense; plus 6) possibly other requirements. In addition, the Issuing Authority (Issuing Participant) would take all responsibility for any test data it obtained from the manufacturer. It would not be required, however, that the Issuing Authority be

present at the MTL for all of the testing. The NCWM has already determined that NTEP will not accept test data from manufacturers unless there was an Issuing Authority representative on-site at the manufacturer's site to supervise 100 % of the testing.

Dr. Charles Ehrlich attended the TC 3/SC 5 meeting held October 2010 in France. The meeting had two intended objectives: 1) to further the process of incorporating necessary revisions to the two main documents pertaining to the OIML Certificate System for Type Evaluation (OIML B 3 on the OIML Basic Certificate System, and OIML B 10 on the OIML MAA; and 2) to further the possibility of permitting under the MAA the use of test data that is obtained directly from instrument manufacturers.

The revisions of B 3 and B 10 are necessary in order to update these documents to incorporate lessons learned over the last several years during the startup phase of the MAA. Revising the documents also permits their "harmonization," in the sense that the MAA is now seen as an extension of the Basic Certificate System, and so it is necessary to better clarify how the two systems work together, yet separately. The meeting focused on addressing some specific comments that had been submitted on draft revisions of B 3 and B 10 that had been circulated prior to the meeting. Topics discussed included legal obligations of authorities that issue OIML certificates, whether to combine all of the individual signed arrangements under the MAA into one master document, confidentiality of reports submitted to the Committees on Participation Review (CPRs) that decide which testing laboratories can participate in the MAA system, equity of the processes used for accreditation, or peer review of the testing laboratories, the number of participants required to begin an arrangement for a particular category of instrument, and several issues related to ownership of OIML Certificates (e.g., withdrawal and transfer of certificates). Revised drafts of the B 3 and B 10 documents were developed by the conclusion of the meeting, and will be circulated (along with responses to the comments) by the Secretariat to TC 3/SC 5 members for vote, with the objective of having final documents submitted to the International Committee on Legal Metrology (CIML) for their vote at the next CIML Meeting (October 2011).

The issue of whether to allow test data from manufacturers' test laboratories (MTLs) into the MAA has been contentious. The practice of utilizing test data from MTLs to issue national or regional type approval certificates has been used fairly successfully for many years in parts of Europe, but seems to be opposed in many other parts of the world, including by the NCWM. The NCWM continues to state its current position that NTEP will not accept test data from manufacturers unless there is an Issuing Authority representative on-site at the manufacturer's site to supervise 100 % of the testing.

At the January 2011 Interim Meeting, the NTEP Committee reviewed four items related to the revisions of B 3 and B 10: (1) housekeeping revisions to Document B 3; (2) housekeeping revisions to B 10; (3) revisions to B 10 that would incorporate provisions under which manufacturers' test data would be accepted under the MA, and (4) a resolution of compromise whereby countries may voluntarily accept manufacturers' test data. The NTEP Committee recommended that the Board of Directors authorize the U.S. Representative to vote YES on items (1) and (2), NO on item (3), and YES on item (4) with a qualifying statement that the United States would not accept any MAA certificates based on manufactures' test data. The Board of Directors voted to support all of the recommendations from the NTEP Committee.

During the Annual Meeting, Dr. Chuck Ehrlich gave an update of current international activities. He reported that OIML held a two-day seminar in June 2011, in Utrecht, The Netherlands, to explore whether there is a role that OIML might play in an international conformity to type (CTT) program. The first day of the two-day seminar was devoted to formal presentations related to the topic. Presentations were provided by ISO and IEC on their conformity assessment programs, by United States (Mr. Don Onwiler), European, and Australian experts to discuss CTT programs in use in their countries/regions, by United States (Mr. Darrell Flocken) and European manufacturers to get their perspectives on the needs for, and likely success of, an OIML CTT program, and by a representative (from New Zealand) of the Asia Pacific Legal Metrology Program (APLMF) providing perspectives from that region. At the conclusion of the presentations, some participants indicated they had not realized how far the U.S. CTT program had come, and seemed glad to learn that it was operating and could possibly serve as a good model for others (while recognizing, of course, that NCWM/NIST documents/requirements, and not OIML Recommendations are used as the basis of the program).

The second day of the seminar was devoted to discussing issues raised during the first day, including "What is the problem needing to be solved by an OIML CTT program?", better clarification of concepts and terminology, and defining the scope of what an OIML CTT program might cover. The initial discussion focused on elaborating between the concepts of a complete CTT program that includes both initial verification and market surveillance, and what Mr. Onwiler characterized as a P erformance to Type program (PTT) that looks only at compliance of production instruments that have not left the manufacturer's site. It was decided that any OIML program should be of the PTT rather than the CTT variety, since the latter is too broad in scope for OIML to handle, at least at the start. After additional discussion concerning what OIML might possibly be able to provide, it was decided that the best starting point for OIML would be the development of an OIML Document, similar to D 1 (Model Law on Metrology) that could serve as a best-practices document, which other countries/regions might try to emulate. The Document would describe the United States, European, Australian (for water meters) and possibly other systems. This will be discussed at a follow-up workshop being held in conjunction with the next meeting of the International Committee of Legal Metrology (CIML) in Prague in October, 2011.

The NTEP Committee also heard concerns from U.S. manufacturers that some foreign labs authorized to conduct tests and issue MAA certificates, have stated they cannot test load cells to Handbook 44, Class IIIL requirements. The Committee acknowledges there may be some confusion that needs to be addressed. The next OIML meeting of the Committee on Participation Review (CPR) addressing the maintenance and renewal of the R 60 DoMC is scheduled to be held September 21 - 23, 2011, in Germany. The NCWM Board of Directors has authorized the NTEP Administrator to attend the meeting and explore the issues.

500-3 I NTEP Participating Laboratories and Evaluations Reports

Background: During the 2010 Annual Meeting, Mr. Jim Truex, NTEP Administrator, updated the Committee on NTEP laboratory and administrative activities.

The NTEP weighing and measuring laboratories held a j oint meeting March 22 - 26, 2010, in Sacramento, California. The NTEP weighing laboratories met again in August 2010, prior to the meeting of the Weighing Sector in Columbus, Ohio, and the NTEP measuring laboratories met once more in October 2010, prior to the Measuring Sector meeting in Columbia, South Carolina.

During the Interim Meeting, Mr. Truex reported to the Committee that incoming applications remain comparable to normal. He reported there is no backlog concern for measuring devices and the brick and mortar weighing labs at this time. Updated NTEP laboratory statistics will be provided to the membership at the NCWM Annual Meeting.

2011 NTEP Meetings:

• NTETC Belt-Conveyor Sector	February 23 - 24, 2011	St. Louis, Missouri
• NTETC Software Sector Meeting	March 15 - 16, 2011	Annapolis, Maryland
• NTEP Laboratory Meeting	March 28 - April 1 , 2011	Annapolis, Maryland
• NTETC Grain Analyzer Sector	August 24 - 25, 2011	Kansas City, Missouri
• NTETC Weighing Sector	August 30 - September 1, 2011	Sacramento, California
• NTETC Measuring Sector	October 21-22, 2011	Norfolk, Virginia

The Committee previously announced plans to conduct a survey of NTEP customers and NTEP laboratories regarding customer service. The Board plans to use the results of the survey to form a continuous improvement plan for NTEP. A small WG was formed to get the project rolling. The resulting draft was presented to the Board of Directors during the 2011 Annual Meeting in Montana. Like with any survey, the challenge is to develop a document that is concise enough that customers will respond, while also providing a meaningful set of data. The survey is expected to be ready for release to all active CC holders within the next six months.

The NTEP Committee reviewed the following NTEP statistics.

NTEP Statistics Report

General NTEP Statistics	2009 - 2010		2010 - 2011		*Grand Total	
	10/01/09 - 6/30/10		10/01/10 - 6/30/11		10/1/00 - 6/30/11	
Total Applications Processed	(6)	174	(41)	209	(188)	2850
Applications Completed		218		206		2567
New Certificates Issued		197		191		2297
Active NTEP Certificates on 6/30/2011						1797

( ) = Reactivations

Assignments to Labs per Year	10/1/09 - 9/30/10		10/1/10 - 6/30/11		10/1/00 - 6/30/11	
California	(1)	29	(1)	15	(15)	379
Canada		7		7	(4)	35
GIPSA-DC		1		0		15
GIPSA-KC		6		7		75
Kansas		13		7	(9)	65
Maryland	(4)	44	(6)	22	(19)	289
New York	(2)	8		1	(17)	161
NIST Force Group	(1)	14		8		82
North Carolina		13	(2)	14	(4)	94
Ohio		31		39	(15)	733
NTEP Staff		70	(1)	96	(9)	711
Applications Not Yet Assigned to a Lab						4

( ) = Reassignments from another lab

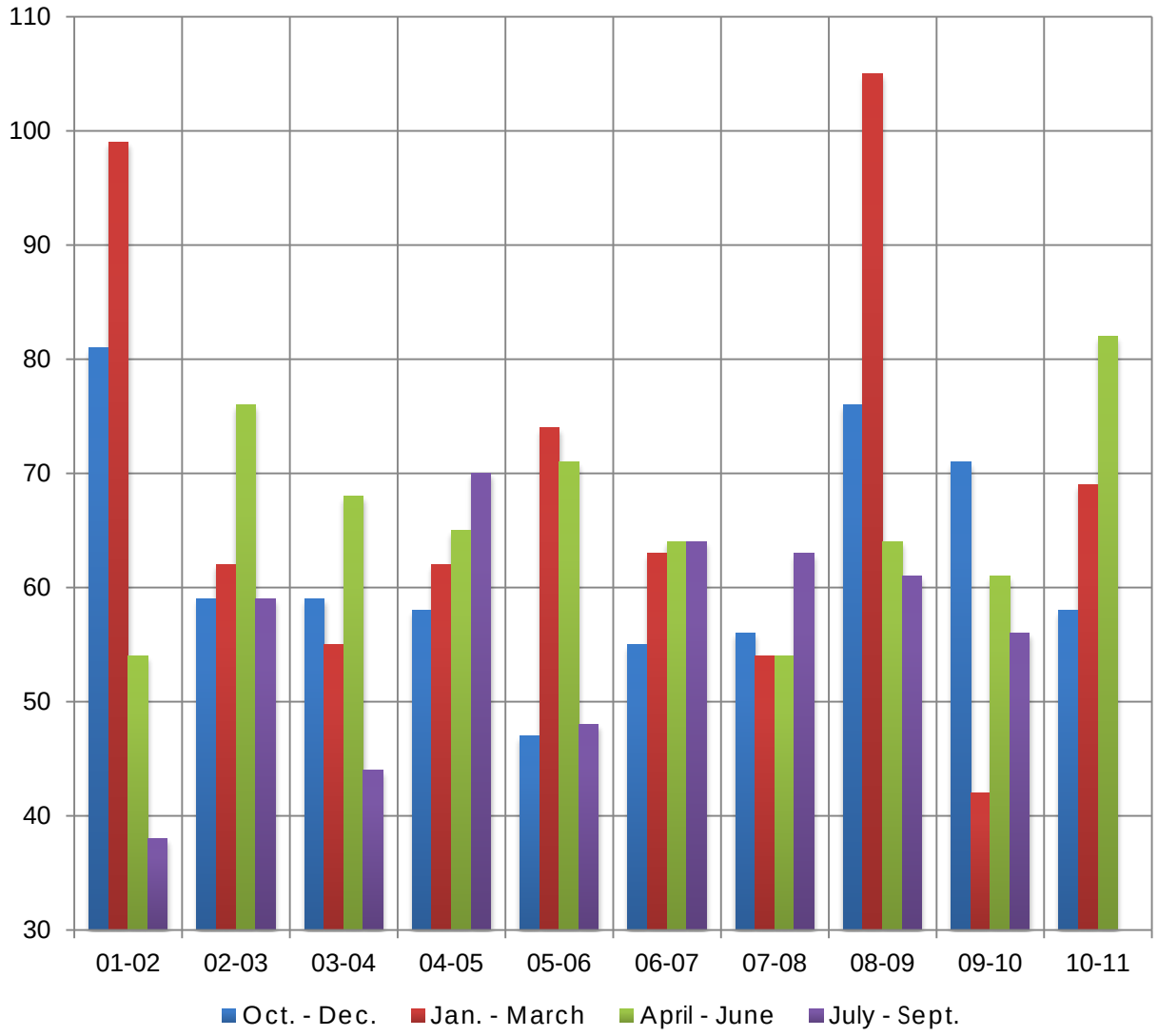
Process Statistics	2010 - 2011	2000 - 2011
Average Time to Assign an Evaluation	5 Days	10 Days
Average Time to Complete an Evaluation		144 Days

Report on NTEP Evaluations in Progress

Evaluations in Progress	0 - 3 Months	3 - 6 Months	6 - 9 Months	9 - 12 Months	Over 1 Year	Total
April 2009	58	29	27	17	36	167
June 2009	48	27	17	12	29	133
October 2009	41	33	18	12	33	137
December 2009	45	30	22	12	28	137
March 31, 2010	24	20	18	19	23	104
June 30, 2010	37	12	11	13	24	97
October 30, 2010	40	30	8	8	20	106
December 31, 2010	39	25	22	5	20	111
March 31, 2011	37	27	13	19	17	107
June 30, 2011	**47**	**20**	**7**	**7**	**21**	**102**

In Progress by Lab	0 - 3 Months	3 - 6 Months	6 - 9 Months	9 - 12 Months	Over 1 Year	Total
California	7	5	1	4	9	26
Canada	2	3	1	0	1	7
GIPSA-DC	0	0	0	0	0	0
GIPSA-KC	5	0	1	0	1	7
Kansas	5	1	0	0	3	9
Maryland	9	2	0	2	3	16
New York	0	0	0	0	0	0
NIST Force Group	2	4	1	1	2	10
North Carolina	2	1	1	0	0	4
Ohio	6	4	2	0	2	14
NTEP Staff	9	0	0	0	0	9
					Total Pending:	**102**

Report on NTEP Applications Received by Quarter



Applications	01 - 02	02 - 03	03 - 04	04-05	05 - 06	06-07	07 - 08	08 - 09	09 - 10	10 - 11
Oct – Dec	81	59	59	58	47	55	56	76	71	58
Jan – Mar	99	62	55	62	74	63	54	105	42	69
Apr – Jun	54	76	68	65	71	64	54	64	61	82
Jul - Sep	38	59	44	70	48	64	63	61	56	
Total	**272**	**256**	**226**	**255**	**240**	**246**	**227**	**306**	**230**	**209**

Average Per Quarter Overall:	**63.3**
Average Per Quarter This FY:	**69.7**

500-4 I National Type Evaluation Technical Committee (NTETC) Sector Reports

Background/Discussion: The Committee is happy to report that all National Type Evaluation Technical Committee (NTETC) Sector reports were available to members at the time Pub 15 was published, and is committed to insuring that electronic versions of Sector reports are available with Pub 15 in the future. Please note that the Sector reports will only be available in the electronic version of Pub 15; it will not be available in the printed versions of Pub 15. (NIST/WMD –www.nist.gov/pml/wmd/index.cfm and NCWM – www.ncwm.net)

Grain Moisture Meter and NIR Protein Analyzer Sectors: The NTETC Grain Moisture Meter and NIR Protein Analyzer Sectors held a joint meeting in Kansas City, Missouri, August 25 - 26, 2010. A draft of the final summary was provided to the Committee, prior to the 2011 NCWM Interim Meeting for review and approval.

The next meeting of the Grain Moisture Meter and NIR Protein Analyzer Sectors is scheduled for August 24 - 25, 2011, in Kansas City, Missouri. For questions on the current status of Sector work, or to propose items for a future meeting, please contact the Sector Technical Advisors:

Ms. Diane Lee
NIST WMD
100 Bureau Drive, Stop 2600
Gaithersburg, MD 20899-2600
Phone: (301) 975-4405
Fax: (301) 975-8091
e-mail: diane.lee@nist.gov

Mr. Jack Barber
J.B. Associates
10349 Old Indian Trail
Glenarm, IL 62536
Phone: (217) 483-4232
e-mail: barber.jw@comcast.net

Measuring Sector: The NTETC Measuring Sector met October 1 - 2, 2010, in Charleston, South Carolina. A draft of the final summary was provided to the NTEP Committee prior to the 2011 NCWM Interim Meeting for review and approval.

The next meeting of the Measuring Sector is scheduled to be held in Norfolk, Virginia, October 21 - 22, 2011, in conjunction with the Southern Weights and Measures Association's 2011 Annual Meeting. Tina Butcher announced that the NIST WMD has assigned a new Sector Technical Advisor for 2011, Mr. Marc Buttler. For questions on the current status of Sector work, or to propose items for a future meeting, please contact the Sector Technical Advisor:

Ms. Tina Butcher
NIST WMD
100 Bureau Drive, Stop 2600
Gaithersburg, MD 20899-2600
Phone: (301) 975-2196
Fax: (301) 975-8091
e-mail: tbutcher@nist.gov

Mr. Marc Buttler
NIST WMD
100 Bureau Drive, Stop 2600
Gaithersburg, MD 20899-2600
Phone: (301) 975-4615
Fax: (301) 975-8091
e-mail: marc.buttler@nist.gov

Software Sector: The NTETC Software Sector met March 2 - 3, 2010, in Sacramento, California. A final draft of the meeting summary was provided to the Committee, prior to the 2011 NCWM Interim Meeting for review and approval.

The next meeting of the Software Sector is scheduled for March 15 - 16, 2011, in Annapolis, Maryland. For questions on the current status of Sector work or to propose items for a future meeting, please contact the Sector Chairs and NTEP Administrator:

Mr. Jim Pettinato
Sector Chair
FMC Technologies
1602 Wagner Avenue
Erie, PA 16510
Phone: (814) 898-5250
Fax: (814) 899-3414
e-mail: jim.pettinato@fmcti.com

Mr. Norm Ingram
Sector Chair
CA Div. of Measurement Standards
6790 Florin Perkins Road, Suite 100
Sacramento, CA 95828
Phone: (916) 229-3016
Fax: (916) 229-3026
e-mail: ningram@cdfa.ca.gov

Mr. Jim Truex
NTEP Administrator
NCWM
1135 M Street, Suite 110
Lincoln, NE 68508
Phone: (740) 919-4350
Fax: (740) 919-4348
e-mail: jim.truex@ncwm.net

Weighing Sector: The NTETC Weighing Sector met August 31 - September 2, 2010, in Columbus, Ohio. A final draft of the meeting summary was provided to the Committee, prior to the 2011 NCWM Interim Meeting for review and approval.

The next Weighing Sector meeting is scheduled for August 30 - September 1, 2011, in Sacramento, California. Tina Butcher announced that the NIST WMD has assigned a new Sector Technical Advisor for 2011, Mr. Richard Harshman. For questions on the current status of Sector work or to propose items for a future meeting, please contact the Sector Technical Advisor:

Mr. Rick Harshman
NIST WMD
100 Bureau Drive, Stop 2600
Gaithersburg, MD 20899-2600
Phone: (301) 975-8107
Fax: (301) 975-8091
e-mail: richard.harshman@nist.gov

Belt-Conveyor Scale Sector: The NTETC Belt-Conveyor Scale Sector met February 24 - 25, 2009, in St. Louis, Missouri. A final draft of the meeting summary was provided to the Committee, prior to the 2010 NCWM Interim Meeting for review and approval.

The next meeting of the Belt Conveyor Scale sector is scheduled for February 23 - 24, 2011, in St. Louis, Missouri. For questions on the current status of Sector work or to propose items for a future meeting, please contact the Sector Technical Advisor:

Mr. John Barton
NIST WMD
100 Bureau Drive, Stop 2600
Gaithersburg, MD 20899-2600
Phone: (301) 975-4002
Fax: (301) 975-8091
e-mail: john.barton@nist.gov

The NTEP Committee reviewed and approved all 2010 NTETC Sector reports during the Interim Meeting. The Committee also reviewed and approved a report of the Multiple Dimension Measuring Device Work Group from their meeting held December 7 - 8, 2010. The Northeast region was represented by Mr. Mark Coyne due to the absence of Mr. Sikula.

500-5 I Conformity Assessment Program

Background/Discussion: The Conformity Assessment Program was established to ensure devices produced after the device has been type evaluated and certified by NTEP continue to meet the same requirements. This program has three major elements: 1) Certificate Review (administrative); 2) Initial Verification (inspection and performance testing); and 3) Verified Conformity Assessment (influence factors). This item is included on the Committee's agenda to provide an update on these elements.

Certificate Review: Certificates are constantly under review by NTEP staff and laboratories. Many active certificates are amended annually, because of manufacturer submission for evaluation or issues reported by the states pertaining to information on the certificate. When the devices are re-evaluated and certificates are amended, the information is reviewed and necessary steps are taken to assure compliance and accurate, thorough information is reported on the certificate.

In an effort to keep certificate information up to date, the NTEP Committee offered, during the CC annual maintenance fee invoice period, an opportunity for active certificate holders to update contact information that is contained in the "Submitted By" on certificates during the payment period with the payment of their annual maintenance fee. Many CC holders have taken advantage of the opportunity.

Initial Verification (IV): The IV initiative is ongoing. Field enforcement officials perform an initial inspection and test on new installations on a routine basis. The Committee recognized that the states do not want IV reporting to be cumbersome.

An IV report form has been developed. The Committee wanted to have a simple form, perhaps web based for use by the state and local regulators. The form has been approved by the Committee and distributed to the states. A completed form can be submitted via mail, e-mail, fax, or online. The form is available to regulatory officials who are members of the NCWM online at www.ncwm.net/content/initial_verification_report.

Verified Conformity Assessment Program (VCAP): The NCWM and NTEP have been concerned about production meeting type, protecting the integrity of the NTEP CC since the inception of NTEP. Load cells traceable to NTEP certificates have been selected for the initial effort. All holders of NTEP CCs for load cells have been notified.

The NCWM Board of Directors reconfirmed its belief that conformity assessment is vital to NTEP's continued success and will be implemented. VCAP Audit Reports for manufacturers with load cell certificates were due no later than June 30, 2010. VCAP Audit Reports for private label certificate holders were due no later than November 30, 2010. VCAP for load cells will occur according to the final timelines below.

NTEP VCAP Timeline – Load Cell Manufacturer Certificate Holders				
Jul 2008 – Ongoing	**Jan 2009 – Jun 2010**	**Jan 2010 – Sep 2010**	**Jul 2010 – May 2011**	**May 2011**
Refine VCAP procedures	LC Manufacturers to put VCAP QM system in place	NTEP to evaluate incoming Certification Body audit reports	NTEP to contact manufacturers not meeting VCAP and encourage compliance	CCs declared inactive if CC holder fails to meet VCAP
Answer incoming questions	Conduct audit by Certified Body		Continue to evaluate incoming audit reports	
Refine/develop appeals process	Submit audit report to NCWM/NTEP			
Notify all CC holders of updated plan, Q&A, etc.				

NTEP VCAP Timeline – Load Cell Private Label Certificate Holders				
Jul 2008 – ongoing	**Jan 2009 – Nov 2010**	**Jun 2010 – Mar 2011**	**Dec 2010 – May 2011**	**Nov 2011**
Refine VCAP procedures	CC holders to put VCAP QM system in place	NTEP to evaluate incoming Certification Body audit reports	NTEP to contact manufacturers not meeting VCAP and encourage compliance	CCs declared inactive if CC holder fails to meet VCAP
Answer incoming questions	Insure audit by Certified Body		Continue to evaluate incoming audit reports	
Refine/develop appeals process	Submit audit report to NCWM/NTEP			
Notify all CC holders of updated plan, Q&A, etc.				

The NCWM decided to require a systems audit checklist that is to be completed by an outside auditor, and submitted to the NCWM per Section 2.5 of the VCAP requirements. A "VCAP Systems Audit Checklist for Manufacturers" and a "VCAP Systems Audit Checklist for Private Label Certificate Holders" have been developed and are available on the NCWM website at www.ncwm.net.

In 2010, the NCWM revised requirements for private label CC holder audits and auditors. A new checklist for private label certificate holders was developed and distributed. The requirements for the Certification Body and VCAP auditor were changed to require an "ISO auditor." Clarification was requested to avoid confusion by private label auditors. The Committee added clarification language to the introduction section of the private label checklist.

Additionally, the Committee developed a new NCWM Publication 14 (Pub 14), Administrative Policy to distinguish between the requirements for parent NTEP certificate holders (S.1.c.) and private label certificate holders. The requirements in S.1.d. track the private label checklist requirements; traceability to parent NTEP CC, traceability of the private label cell to a VCAP audit, purchase and sales records, plan to report non-conforming product and non-conforming product in stock, plan to conduct internal audits to verify non-compliance action, and internal audit records.

Proposed S.1.d. NTEP Verified Conformity Assessment Program (VCAP) Procedures for Private Label Certificate Holders

Introduction

Many NTEP Certified devices must meet NIST Handbook 44 (HB 44), *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices,* requirements for influence factors. It is not possible to verify these requirements during the Initial Verification in the field. Therefore, manufacturers of metrological devices (instruments), and/or components (modules), which are subject to influence factors, as defined in HB 44, must have a Verified Conformity Assessment Program (VCAP) in place to ensure that these metrological devices and/or components are produced to perform at a level consistent with that of the device and/or component previously certified.

For weighing devices that are subject to influence factors, traceable to a private label NTEP Certificate of Conformance, NTEP will require the private label certificate holder to verify that the parent certificate holder has complied with VCAP requirements, has a current VCAP audit certificate, the VCAP certification is traceable back to the parent NTEP certificate, and the parent certificate is active.

Devices that Must Meet this Requirement are Limited to the List Below:

- Load Cell (T.N.8.)
- Indicating Elements (T.N.8.)
- Weighing/Load Receiving Elements with non-NTEP Load Cells (T.N.8.)

- Complete Scales (T.N.8.)
- Automatic Weighing Systems (T.7.)
- Belt-Conveyor Scales (T.3)
- Automatic Bulk Weighing Systems (T.7.)

Requirements:

1. The Private label NTEP CC Holder's Responsibilities:

1.1 Documentation is available to show that all private label certificates are traceable back to a parent certificate holder(s).

1.2 All parent certificates are active.

1.3 Records are records available to show the private label certificate holder has confirmed that the supplier has a current VCAP audit meeting applicable requirements.

1.4 The private label certificate holder's purchase and sales records verify that no other supplier is providing the product listed on the NTEP certificate.

1.5 The supplier's sales records agree with the private label certificate holder's purchasing records.

1.6 The private label certificate holder has a plan in place to report non-conformance to the supplier.

1.7 The private label certificate holder has a plan in place to address non-conforming devices already sold or in stock.

1.8 The private label certificate holder has a p lan in place to conduct internal audits to verify non-conformance action. Internal audits shall be conducted at established intervals, not to exceed one year.

1.9 Surveillance audits for VCAP conducted by an outside auditor representing a certification body must be completed. The surveillance audits will be conducted every three years until objective evidence is obtained to move to a maximum of every five years.

1.10 The NTEP private label CC holder shall take corrective action within 90 days of non-conformances sited by the auditor.

1.11 All records and plans shall be made available to the VCAP auditor.

2. Certification Body's Responsibilities:

2.1. The selected Certification Body (auditor) shall be accredited to the **ISO 9001:2008** standard for providing audits and certifications of management systems.

2.2. The Certification Body is required to notify NCWM when a major breakdown of the NTEP private label CC holder's VCAP program is found.

2.3. The Certification Body shall submit a completed "VCAP Systems Audit Checklist for Private Label Certificate Holders" to NCWM. Submitted documentation must contain a clear statement of compliance as a result of the VCAP audit.

3. NCWM Responsibilities:

3.1. For new certificate holders, ensure that VCAP certification has been completed within a one year cycle of the first maintenance fee, but not to exceed 18 months (example: if NTEP certified in July 2011. VCAP certification would be required by November 2012).

3.2. As part of annual maintenance, NCWM shall ensure that VCAP audit reports are on file, current, and that all non-conformances have been addressed.

3.3. Ensure that an appeals process is in place and made available to Certificate holders. [Note: The appeal and review process contained in section T. of this document shall be used.]

Current Comment: At the Interim Meeting, the Committee heard no opposition to the proposed S.1.d. section to NCWM Publication 14, Administrative Policy. It was recommended that the citation of the ISO 9001 standard be updated to reflect the updated 2008 standard, which has been changed in subsection 2.1. The NTEP Committee was again asked to announce which device(s) will be next after load cells. Comments from the membership also urged the NTEP Committee to look at what issues surfaced, based upon the load cell VCAP initiative, and how we can improve VCAP before moving on to the next phase.

During the Annual Meeting open hearing, the NTEP Committee announced that the next device category under consideration is weighing/load receiving elements, 2000 lb capacity and less using load cells that are not traceable to their own NTEP certificate. The NTEP Committee would like to receive comments from the membership so that the NTEP Committee can identify and understand any concerns before a final decision is made and timetable established.

The NTEP Committee heard comments from several manufacturers pertaining to VCAP and the next device category. The Committee expects there will be additional questions and is considering the need to form a VCAP committee to discuss the issues. However, the NTEP Committee would like to have a better understanding of the specific questions and concerns. Certificate holders and other interested parties are encouraged to submit written questions to the NTEP Committee so decisions can be made regarding the need for a VCAP Committee and, if needed, the make-up of the group.

500-6 I NTEP Contingency

Source: NTEP Committee

Purpose: NTEP Contingency, to keep NTEP operating and ensure NTEP services are available at an adequate level. The NTEP Committee wants to ensure there is an appropriate number of laboratories and personnel (evaluators) to maintain viable support for NTEP services, including MRAs, MAAs, and potentially to be an R 76 Issuing Participant.

Item Under Consideration: The NTEP Committee discussed contingency planning for continuity of NTEP operations. With the state of today's economy, what if NTEP lost a lab? How will NTEP maintain workflow? Are there additional states interested in applying to become an NTEP field lab or an NTEP brick-and-mortar lab? The NTEP Committee will continue to discuss these issues during a long-range planning session and welcomes comments from the membership.

Issues under consideration include should the NCWM:

1. Employ NTEP evaluators to conduct testing at manufacturer's facilities?

2. Have evaluators under contract to conduct testing at manufacturer's facilities?

3. Employ NTEP evaluators or have evaluators under contract to assist the state NTEP laboratories?

4. Have a brick and mortar NTEP laboratory and NTEP evaluators?

5. Use a private third party laboratory to conduct NTEP evaluations?

The Committee heard testimony expressing support and concerns pertaining to the options. Several stated that the Committee should consider adding OIML MAA participation as a Utilizing Participant to the list. Another urged the Committee to continue working on the idea of NCWM NTEP evaluators, an NCWM NTEP lab, and keeping all options open. One member asked the Committee to consider accepting manufacturer compliance data in lieu of hiring NTEP contractors. A nother suggestion from the floor was to consider beefing up and utilizing "Initial Verification" as part of the NTEP process. A representative of a state brick and mortar NTEP laboratory asked the Committee to move cautiously forward and not destroy the state NTEP labs. H e expressed concern that the establishment of an NCWM/NTEP brick and mortar lab could lead to significant legal complications for the states.

Current Comment: The NTEP Committee wants the membership to know that, at this time, the preferred course of action would be the evaluators under contract option. The Committee recognizes the commitment states with NTEP laboratories have made over the years, and would only resort to contingency measures in the event of a severe loss of state lab resources. Labs are handling current demand without a need for contingency measures. The Committee continues to keep NTEP contingency a top priority and watch over the status of the laboratories.

500-7 I Publication 14 – NTEP Administrative Policy

Source: NTEP Committee

Purpose: The NTEP Committee feels that it in the best interest of the program to amend the NTEP Administrative Policy to make it clear that the manufacturers/CC holders are obligated to meet current HB 44 requirements, regardless of when the devices covered by the NTEP certificate(s) were evaluated and the certificate was issued.

Item Under Consideration: Amend sections D.2., J.1.a, R. and S. as follows.

Amend Section D.2. to read:

D.2. Responsibility for Reporting Occurrence of Modification

When a manufacturer **or other certificate holder** makes changes to a certified type, evaluation of the modification may be necessary. **Manufacturers and other certificate holders are responsible for ~~i~~ensuring compliance of the production devices to NIST Handbook 44. When changes to NIST Handbook 44 are adopted by the NCWM that affect the device traceable to an NTEP certificate, devices produced after the effective date must meet the current applicable Handbook 44 requirements.** The manufacturer must report changes that might require the attention of NTEP. The decision to report changes is dictated by the metrological significance of the modification.

a. Notification of Change

The manufacturer **or other certificate holder** notifies NTEP that a change to a certified device has been made or is contemplated. The manufacturer may make judgments concerning the modifications and request issuance of an approval of a modification, by citing the existing Certificate of Conformance, detailing the changes, giving any data, analysis, and conclusions concerning the technical or metrological consequences of the changes.

b. NTEP Options

On the basis of the manufacturer's **or other certificate holder's** notification, NTEP will decide whether or not to require an evaluation for approving the modification or issuance of a n ew Certificate of Conformance. NTEP will inform the ~~**manufacturer**~~ **certificate holder** accordingly.

Amend Section J.1.a to read:

J.1. Re-evaluation to Verify Compliance

NTEP may decide to re-evaluate a previously evaluated type, whether or not a Certificate of Conformance has been issued. Re-evaluation must be justified based on considerations such as the following:

a. Manufacturers and other certificate holders are responsible for ~~i~~ensuring compliance of the production devices to NIST Handbook 44. When changes to NIST Handbook 44 are adopted by the NCWM that affect the device traceable to an NTEP certificate, devices produced after the effective date must meet the current applicable Handbook 44 requirements. That is, ~~D~~devices manufactured after the effective date of any new non-retroactive regulations must meet the new requirements; devices manufactured prior to the effective date of such regulations must meet retroactive requirements only.

Amend Section R to read:

R. Post Evaluation Responsibility of ~~**Manufacturer**~~ **Certificate Holder**

As a result of requesting an evaluation and accepting an NTEP Certificate of Conformance, the manufacturer implicitly claims that all devices manufactured as the type referenced in the Certificate of Conformance are the same type. **Manufacturers and other certificate holders are responsible for ~~i~~ensuring compliance of the production devices to NIST Handbook 44. When changes to NIST Handbook 44 are adopted by the NCWM that affect the device traceable to an NTEP certificate, devices produced after the effective date must meet the current applicable Handbook 44 requirements. The certificate holder may be responsible for reporting modifications to NTEP, per section D.2.a. NTEP does not normally require re-evaluation for technical requirement changes to NIST Handbook 44 per section J.1.a. as compliance can be determined through field enforcement.** If a production device is found with a model number corresponding to that referenced in the Certificate of Conformance, but which does not conform to the type, the Certificate of Conformance may be withdrawn.

Amend Section S to read:

S. Conformity Assessment Process

Type approval (certification) is one of the main elements in the metrological control system for weighing and measuring devices used in commercial measurements. The NTEP Certificate of Conformance, issued by NCWM, is a tool used by weights and measures officials in the inspection and approval of those devices. NTEP looks at one or more devices in a family, during the evaluation process. This typically occurs in the early stages of product development or production, yet it is expected that a commercial device will have a useful production life of several years. It is inevitable that changes will occur in production methods or components, that new features will be added to improve the product to respond to user needs and that the technical and performance standards will change as NIST Handbook 44 evolves in its annual cycle. Some of these changes will result in the ~~**manufacturer**~~ **certificate holder** requesting a re-evaluation. The content and format of a Certificate of Conformance will also evolve over time.

Conformity Assessment is a responsibility of the certificate holder. It is vital that the Certificate of Conformance accurately reflects the device design and its features. It is also vital that the device be manufactured in conformance with the applicable requirements, while the Certificate of Conformance is in active status. In addition to the type evaluation, described in Section E through G of this document, the steps below outline the measures NTEP will use to keep the Certificate of Conformance accurate and to ensure conformance.

Current Comment: Based upon comments heard from the floor during the open hearings, the NTEP Committee carefully reviewed the proposed language and decided the use of "manufacturers and other certificate holder" terminology appropriately describes the intent of the policies.

The review did reveal a need to change the word "insuring", found in paragraphs D.2., J.1.a. and R. to "ensuring". Also, a change was made to the last sentence in D.2.b. to read, "NTEP will inform the ~~**manufacturer**~~ **certificate holder** accordingly." The changes will be incorporated into the 2012 version of NCWM Publication 14.

Mr. Randy Jennings, Tennessee, NTEP Committee Chair

Mr. Tim Tyson, Kansas, NCWM Chair
Mr. Mike Sikula, New York
Mr. Brett Saum, San Luis Obispo County, California
Mr. Kurt Floren, LA County, California
NTEP Technical Advisor: Mr. Jim Truex, NTEP Administrator

National Type Evaluation Program Committee

Appendix A

National Type Evaluation Technical Committee (NTETC) Grain Analyzer Sector

August 25 - 26, 2010
Kansas City, Missouri

Meeting Summary

1. Report on the 2010 NCWM Interim and Annual Meetings.....NTEP - A1
2. Report on NTEP Type Evaluations and OCP (Phase II) Testing .....NTEP - A2
3. Review of Ongoing Calibration Program (Phase II) Performance Data.....NTEP - A2
4. Report on New GIPSA/NIST Interagency Agreement for 2010 – 2014 .....NTEP - A3
5. Item 310-1 G-S.8. Provision for Sealing Electronic Adjustable Components, G-S.8.1., Adjustment Mode Indication, and Definitions for Adjustment and Adjustment Mode.....NTEP - A4
6. Item 310-3: G-S.1. Identification. – (Software) .....NTEP - A9
7. Other Software Requirements That May Impact Grain Analyzers.....NTEP - A12
8. Report on OIML TC17/SC1 R59 "Moisture Meters for Cereal Grains and Oilseeds" .....NTEP - A17
9. Report on OIML TC 17/SC 8 "Protein Measuring Instruments for Cereal Grain and Oil Seeds".....NTEP - A18
10. Standardization of Grain Moisture Meters – Traceability of GMMs used in Meter to Like-Meter testing. .....NTEP - A18
11. Air-Oven Collaborative Study – Analysis of results .....NTEP - A21
12. Proficiency Testing .....NTEP - A23
13. Time and Place for Next Meeting .....NTEP - A24
14. Future Direction of Moisture Measurement Technology .....NTEP - A24

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1. Report on the 2010 NCWM Interim and Annual Meetings

The 95th Annual Meeting of the National Conference on Weights and Measures (NCWM) was held July 11 - 15, 2010, in St. Paul, Minnesota. No Grain Moisture Meter (GMM) or Near Infrared (NIR) Grain Analyzer items appeared in the Specifications and Tolerances (S&T) Committee Interim Report for consideration by the NCWM at the 2010 Annual Meeting.

Mr. Jim Truex, National Type Evaluation Program (NTEP) Administrator, reported that Annual Meeting attendance this year was down to approximately 250 registrants with only 35 to 36 states participating. There was some speculation that the attendance drop was partly due to the economy. Conference membership for 2010 is down approximately 200 from 2009. A similar drop in membership occurred the previous year. NCWM is running smoothly; in spite of the drop in membership, the Conference is in sound financial shape.

Other General Code items of interest to the Sector were non-voting items related to software and provisions for sealing electronic adjustable components. [See Grain Analyzer Sector Agenda Items 5, 6, and 7.]

2. Report on NTEP Type Evaluations and On-going Calibration Program (OCP) (Phase II) Testing

Ms. Cathy Brenner of the Grain Inspection, Packers and Stockyards Administration (GIPSA), the NTEP Participating Laboratory for Grain Analyzers, briefed the Sector on NTEP Type Evaluation activity. A Phase I evaluation is currently underway for one new grain moisture meter. Annual GMM calibration reviews were completed on schedule and updated Certificates of Conformance (CCs) were issued for six device types. Six device types are enrolled in the OCP (Phase II) for the 2010 harvest:

Bruins Instruments	**OmegAnalyzerG**
DICKEY-john Corporation	GAC2000 NTEP, GAC2100, GAC2100a, GAC2100b
DICKEY-john Corporation	GAC2500 (first year for this instrument)
Foss North America	Infratec 1241
Perten Instruments	AM5100
The Steinlite Corporation	SL95

[**Note:** Models listed on a single line are considered to be of the same "type."]

Ms. Brenner pointed out that plans to resume work on an addition to and the remodeling of the Federal Grain Inspection Service (FGIS) Technical Services Division Building can have an impact on NTEP testing. Of major concern is the loss the walk-in environmental chamber. The chamber will be completely disassembled and removed to make way for utility hook-ups. It is likely to be the last item to be restored to operating condition. If started in September, the new addition is tentatively scheduled to be completed in March. Some of the labs will then be moved to the new building. The labs remaining in the old building will be rearranged to allow renovations to be made to the empty portion of the old building. Those labs will then be moved into the renovated portion so the renovation can be completed. The air-oven lab, NTEP lab, the moisture meter lab, among others, would each have to be relocated twice in the remodeling process. At least two years of renovations and disruptions are anticipated.

Other facilities are being looked into as possible interim sites where Phase I environmental testing might be performed. One possibility for manufacturers with suitable walk-in environmental chambers would be for GIPSA to perform the tests on-site. There is also the possibility that facilities might be available for GIPSA to use on a short term rental basis. Alternatively, testing could be subcontracted to other NTEP laboratories. There are questions of how the added cost of on-site, rental, or subcontracting can be handled, and what additional training other NTEP laboratories might require for conducting tests unique to grain moisture meters (GMMs). If these details cannot be resolved satisfactorily, testing might have to be deferred until the new facility is fully operational.

Some of the facilities suggested include: Kansas State University, Ohio Department of Agriculture, and Iowa Department of Agriculture. Additional sites are being investigated.

3. Review of Ongoing Calibration Program (Phase II) Performance Data

At the Sector's August 2005 meeting, it was agreed that comparative Ongoing Calibration Program (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, representing GIPSA, the NTEP Participating Laboratory for Grain Analyzers, presented data showing the performance of NTEP meters compared to the air oven. These data are based on the last three crop years (2007 - 2009) using calibrations updated for use during the 2010 harvest season.

Four meter types were included in the comparison graphs: DICKEY-john's GAC2100, Foss's Infratec 1241, Perten's AM5100, and Steinlite's SL95. Only the GAC2100 has been identified on the comparisons. It is identified as "Official Meter". The remaining three instruments were randomly assigned numbers 1, 2 and 3, or, in the case of sunflowers, A and B.

[**Note:** The 2007 - 2009 GMM Phase II comparison graphs were distributed with the August 2010 Grain Analyzer Sector Agenda. Until completion of the NCWM Interim Meeting, held in January 2011, they can be downloaded from the NCWM web site using the following link:
http://www.ncwm.net/sites/default/files/meetings/grain_analyzer/2010/10_GMM_Bias.pdf
After that time, all Grain Analyzer Sector Meeting documents will be moved to the NCWM web site Meetings Archive Folder.]

Ms**.** Brenner pointed out that sunflower results were included this year. They had been eliminated last year to preserve confidentiality, because only two meters were approved for sunflowers and one of them was the Official Meter. This year there are now two meters, in addition to the Official Meter with sunflower results.

The 2009 crop year was atypical especially for Corn and Rough Rice. Many of the samples received were of low test weight per bushel (TW) or of low quality. Two of the meters showed abnormal results especially in the 14 % to 16 % moisture range. When performance was reviewed before calibrations were adjusted (using the calibrations from the 2009 harvest), out of five meters in the program two meters passed, and three just barely failed, if 2009 data was included. When 2009 data was ignored, all meters passed.

Dr. Richard Pierce, GIPSA, expanded on Ms. Brenner's comments, explaining that they had received many more low TW samples than in previous years. Under usual circumstances, GIPSA might have decided that this is not the kind of data that they wanted to use for the calibration program, and they could have deleted those samples. This wasn't done because the effects of low TW differ radically from one meter type to the next. Some read low if TW is low, others may read high, and some are not affected. As a result, GIPSA didn't believe there was a valid reason for deleting those samples. As one of the lower frequency meters, the Official Meter seems to be more sensitive to unusual grain conditions. This has shown up on the rice samples, and there have been issues in the 14 % to 16 % moisture range with corn.

At the last Grain Inspection Advisory Committee meeting, GIPSA was asked if there was anything they could do to improve the moisture calibrations for rice and corn. Dr. David Funk, GIPSA, told the Committee that the meter is doing as well as it can for the technology that is used. He suggested that if this is a serious problem for the Committee, then GIPSA may need to look at selecting a new meter technology that performs better on these atypical crops. The Advisory Committee responded by suggesting that GIPSA move forward and explore that. Although there is presently no agency decision, and no firm timeline regarding selecting a replacement for the current Official Meter, Dr. Pierce was of the belief that we are now at the point where manufacturers and agencies within GIPSA need to be made aware that this could be coming and it could be coming fairly quickly.

Dr. Funk indicated his willingness to make the same Power Point presentation to the Sector that he had given to the Grain Inspection Advisory Committee if the Sector was interested in hearing more on this subject. The Sector agreed to amend the Agenda to include Dr. Funk's presentation. [**Note:** See Agenda Item **14. Future Direction of Moisture Measurement Technology**.]

4. Report on New GIPSA/NIST Interagency Agreement for 2010 – 2014

The five-year Interagency Agreement that provides funding and defines the fee schedule for the NTEP Phase II GMM OCP expired September 30, 2009 (the end of the Federal Government's Fiscal Year 2009). At the time of the Sector's August 2009 meeting, a new Interagency Agreement was being reviewed by the National Institute of Standards and Technology's (NIST's) legal office. The new agreement was finally approved in the spring of 2010.

Dr. Pierce, GIPSA, explained the fee table showing how fees are calculated based on the number of meter types in the program. With six device types presently enrolled in Phase II for the 2010 harvest, the cost to manufacturers will be $8750 per device type. If a seventh meter enters the program, the cost per device type per year increases to $10,715. Dr. Pierce noted that over the last 15 years, the number of meters in the program each year has varied from 5 to 7.

The fee schedule for the new agreement is shown below:

NTEP On-going Calibration Program Fee Schedule
For Year 2010 to 2014

				Funding Contribution From Participants			
(1) Total Meters (including official meter)	(2) Meters in NTEP Pool	(3) Cost Per Pool Meter	(4) Total Program Cost	(5) NIST	(6) GIPSA	(7) Mfg's (total funding from mfg's)	(8) Cost Per Meter Type
2	1	22,500	22,500	7,500	7,500	7,500	3,750
3	2	22,500	45,000	15,000	15,000	15,000	5,000
4	3	22,500	67,500	22,500	22,500	22,500	5,625
5	4	22,500	90,000	30,000	30,000	30,000	6,000
6	5	22,500	112,500	30,000	30,000	52,500	8,750
7	6	22,500	135,000	30,000	30,000	75,000	10,715
8	7	22,500	157,500	30,000	30,000	97,500	12,185
9	8	22,500	180,000	30,000	30,000	120,000	13,335

Column	Explanation (or formula for calculating)
(1) Total Meters	The number of meter types (including the Official GIPSA meter) that will share in the NTEP calibration costs.
(2) Total Meters in NTEP Pool	The number of meter types other than the Official meter that will share in the NTEP calibration costs.
(3) Cost per Pool Meter	The cost associated with each pool meter in the program.
(4) Total Program Cost	A per meter type cost of $22,500 times the number of NTEP "pool" meters.
(5) NIST Contribution	One-third the total program cost up to a maximum of $30,000.
(6) GIPSA Contribution	One-third the total program cost up to a maximum of $30,000.
(7) Manufacturers Contributions (total funding from manufacturers)	Total Program Cost minus NIST Contribution minus GIPSA Contribution.
(8) Cost per Meter Type	Manufacturers' Contributions divided by Total Meters (including the Official meter).

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

Background: This item originated from the Southern Weights and Measures Association (SWMA) and first appeared on the S&T Committee's 2008 agenda. The proposal added requirements to G-S.8. to assure that a device could not be sealed in the configuration mode and continue to operate normally. Such a condition could facilitate fraud. The proposal as submitted required that a device continuously indicate when access to the set-up mode was not disabled.

At the 2008 Interim Meeting, the S&T Committee reviewed comments received during the open hearing and discussed alternate proposals provided by NIST Weights and Measures Division (WMD) and the Scale Manufactures Association (SMA). At the 2008 Annual Meeting, the WMD suggested that the S&T Committee amend the recommendation to address some of the concerns noted by the CWMA, NTEP participating laboratories, and WMD since the 2008 Interim Meeting. The item remained Informational for the 2008 Annual Meeting.

During the open hearings at the 2009 Interim Meeting, WMD stated that it had received comments questioning how the application of a physical seal (as recommended by the manufacturer and listed on the Certificate of Conformance [CC]) ensures that the calibration and configuration modes are disabled. What does that presence of the physical seal (pressure sensitive or lock and wire) do to the device that disables the calibration and configuration modes? The S&T Committee agreed with the comments that the proposal ***was not ready*** to become a Voting item and recommended that the item remain Informational for 2009.

At the 2010 NCWM Interim Meeting, WMD stated that it remained concerned about devices which could be sealed, while allowing access to calibration or configuration changes without breaking that seal. WMD agreed with the position of the NCWM S&T Committee that the current language in paragraph G-S.8. requires that a security seal be broken before a metrological change can be made to a device (or other approved means of security such as an audit trail provided). Thus, once a security seal is applied, it should not be possible to make a metrological change to the device without breaking that seal. Since this philosophy addresses provisions for protecting access to any metrological adjustment, the philosophy should be applied consistently to all device types. WMD encouraged the S&T Committee to reiterate in its Interim and Final Reports the correct interpretation of G-S.8. as the Committee and the Measuring Sector have done in the past, and as demonstrated in more recent actions by the Weighing Sector.

The S&T Committee agreed that a device must be equipped with an approved audit trail, or that a physical seal is required to be broken before any metrological adjustments to comply with paragraph G-S.8. The Committee also believed that an indication that the adjustment mode is in operation is only necessary for devices with approved electronic methods of sealing. Additionally, the adjustment mode indicator should not be operable during normal weighing or measuring operations. The Committee agreed that if a device designed for commercial applications is capable of being sealed and still allows external or remote access to the calibration or configuration mode, then that device is clearly in violation of the current provisions in G-S.8. Provision for Sealing Electronic Adjustable Components and G-S.2. Facilitation of Fraud and, therefore, no change to the existing language in paragraph G-S.8. would be needed. The S&T Committee believed that type evaluation procedures have been amended in applicable sections of NCWM Pub 14 to address the issues of incorrectly applying the requirements in G-S.8. The Committee also noted that there was some confusion regarding the meaning of the terms “adjustment” and “adjustment mode” in the CWMA Annual Meeting reports.

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

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

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

[See the 2008 NCWM Annual and 2009 Interim and Annual Reports for additional background information.]

Item Under Consideration:

Amend General Code paragraph G-S.8. and subsequent subparagraphs.

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

(a) It shall not be possible to apply a physical security seal to the device while it is in the calibration and/or configuration mode nor to access the calibration and/or configuration (adjustment) mode when sealed; or

(b) The calibration and/or configuration adjustments are protected by an approved method for providing security (e.g., data change audit trail).

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

During any mode of operation in which adjustments can be made, devices shall not provide indications that can be interpreted, transmitted into memory, or printed as a usable (legal) measurement value.*
[Nonretroactive as of January 1, 1990]
[Nonretroactive as of January 1, 201X]
(Added 1985) (Amended 1989**, ~~and~~** 1993**, and 201X**)

G-S.8.1. Adjustment Mode Indication. For electronic devices protected by an approved means for providing security (e.g. data change audit trail), the device shall clearly and continuously indicate and print, if equipped with a printer, that the calibration and configuration adjustment modes are enabled. [Nonretroactive as of January 1, 201X]

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G-S.8.~~1~~2. Multiple Weighing or Measuring Elements that Share a Common Provision for Sealing. *– A change to any metrological parameter (calibration or configuration) of any weighing or measuring element shall be individually identified.*
[Nonretroactive as of January 1, 2010]

Note: For devices that utilize an electronic form of sealing, in addition to the requirements in G-S.8.~~1~~2., any appropriate audit trail requirements in an applicable specific device code also apply. Examples of identification of a change to the metrological parameters of a weighing or measuring element include, but are not limited to:

(1) a broken, missing, or replaced physical seal on an individual weighing, measuring, or indicating element or active junction box;

(2) a change in a calibration factor or configuration setting for each weighing or measuring element;

(3) a display of the date of calibration or configuration event for each weighing or measuring element; or

(4) counters indicating the number of calibration and/or configuration events for each weighing or measuring element.

(Added 2007)

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

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

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

Discussion: This item is a carryover from the Grain Analyzer Sector's August 2009 meeting (Agenda Item 9). At that time, the changes did not appear to affect the provisions for sealing GMMs and NIR Grain Analyzers. However, if the most recent language proposed for **G-S.8.** and its sub-paragraphs, see **"Item Under Consideration"** above, is the version that will ultimately be accepted, changes will have to be made in both the GMM Code in HB 44 and the GMM checklist in Pub 14.

The necessary changes could be addressed as follows:

1) Incorporate the essence of the proposed changes to G-S.8. and applicable subparagraphs; retain the simple device categories of the existing GMM Code; broaden the scope of Category 3 by removing "remotely"; and add a note to **Table S.2.5.** to explain the meaning and scope of "Remote configuration capability." This is accomplished by amending paragraph **S.2.5. Provision for Sealing** and **Table S.2.5. Categories of Device and Methods for Sealing** of HB 44 **Section 5.56.(a) Grain Moisture Meters,** and amending all the GMM Pub 14 checklist items under the heading **Code Reference: S.2.5. Provision for Sealing** to include the proposed additions/amendments to **G-S.8.**

The suggested GMM HB 44 changes are as follows:

S.2.5. Provision for Sealing. – Provision shall be made for applying a security seal in a manner that requires the security seal to be broken, or for using other approved means of providing security (e.g., audit trail available at the time of inspection as defined in Table S.2.5. Categories of Device and Methods of Sealing) before any change that affects the metrological integrity of the device can be made to any ***electronic*** mechanism. ***That is:***

(a) It shall not be possible to apply a physical security seal to the device while it is in the calibration and/or configuration mode nor to access the calibration and/or configuration (adjustment) mode when sealed; or

(b) The calibration and/or configuration adjustments are protected by an approved method for providing security (e.g., data change audit trail).

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

[Nonretroactive as of January 1, 201X]

(Amended **201X**)

Table S.2.5.
Categories of Device and Methods of Sealing

Categories of Device	*Methods of Sealing*
Category 1: *No remote configuration capability.*	*Seal by physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.*
Category 2: *Remote configuration capability, but access is controlled by physical hardware.* *A device shall clearly indicate that it is in the remote configuration mode and shall not be capable of operating in the measure mode while enabled for remote configuration.*	*The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.*
Category 3: *Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).* *When accessed* ~~***remotely***~~ *for the purpose of modifying sealable parameters, the device shall clearly* ***and continuously*** *indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.*	*An event logger (**e.g., a data change audit trail**) is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants). A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to twenty-five (25) times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)*
Category 3a: *No remote capability, but operator is able to make changes that affect the metrological integrity of the device (e.g., slope, bias, etc.) in normal operation.*	*Same as Category 3*
Category 3b: *No remote capability, but access to metrological parameters is controlled through a software switch (e.g., password).*	*Same as Category 3*

Note: Remote configuration capability is defined in HB 44 as the ability to adjust a weighing or measuring device or change its sealable parameters from or through some other device that is not itself necessary to the operation of the weighing or measuring device or is not a permanent part of that device.

As used in this table, "remote configuration capability" also includes the ability of the measuring device to accept new or revised sealable parameters from a memory chip, external computer, network, or other device plugged into a mating port (e.g., USB port) on the measuring device or connected wirelessly to the measuring device.
(Added 201X)

[*Nonretroactive as of January 1, 1999* ***and January 1, 201X***]
(Amended 1998)

Note: Zero-setting and test point adjustments are considered to affect metrological characteristics and must be sealed.
(Added 1993) (Amended 1995 and 1997)

Any additions/changes to the GMM section of HB 44 will also need to be made to the corresponding Sections to Pub 14.

Comments/Conclusions: Several Sector members questioned the need for adding "and continuously" to the second paragraph of Category 3 in Table S.2.5., reasoning that menu-driven devices typically allow access to a

configuration mode only by password. Once in a configuration mode, it is not possible to make measurements without first leaving the configuration mode. The Sector agreed that "and continuously" should be deleted.

Please note that this proposal is in response to an Informational item on the NCWM S&T agenda. Consideration of the suggested changes and additions depends on further discussion of this item and on the final action taken by the S&T Committee on **Item 310-1**. This will remain a carryover item for the next Grain Analyzer Sector meeting.

6. Item 310-3 G-S.1. Identification. – (Software)

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

Background: Starting at the October 2007 meeting, the Software Sector has discussed the value and merits of required markings for software. After several iterations, the Software Sector developed a table to reflect their positions. This table was submitted to NCWM S&T Committee and was assigned Developing status in 2008. However, the Software Sector did not include a recommendation on how to incorporate the proposal into existing G-S.1. and G-S.1.1. language. In particular, WMD was concerned about properly addressing the various existing requirements and multiple non-retroactive dates.

Prior to the NCWM 2009 Interim Meeting, NIST WMD commented on S&T Item 310-3, and presented an alternate proposal with significant modifications, which were included in the Interim Meeting Agenda background for the item. There was much additional comment and various proposed versions of the table from NIST WMD, et al.

[Note: For the complete background on Item 310-3 refer to the Specifications and Tolerances Committee Interim Agenda for the 2010 NCWM Interim Meeting as it appeared in Pub 15, 2010. This is available on line at: http://ts.nist.gov/WeightsAndMeasures/Publications/upload/08-ST-10-Pub15-FINAL.pdf.]

At the 2009 Software Sector Meeting, it was agreed that the proposed table had not accomplished the intended purpose of clarifying the requirements. To remove some of the confusion, the Software Sector revisited this item from the beginning, modifying the text of G-S.1. to match the Software Sector's original intent.

At its March 2010 meeting, the Software Sector, in response to comments heard during the 2010 Interim meeting, revised the proposed language changes described in the S&T Committee Interim Agenda **Item 310-3**. These revisions removed existing mention of "not-built-for purpose" and the differentiation between Type P and Type U software types. The first sentence of G-S.1. was restored to the current HB 44 wording.

The Software Sector also initiated discussion on two new concepts, which may eventually result in additional recommendations to amend G-S.1. First, the Software Sector sees merit to requiring some "connection" between the software identifier (i.e., version/revision) and the software itself. The proposal was as follows (with the expectation that examples of acceptable means of implementing such a link would be included in Pub 14).

Add a new sub-subparagraph **G-S.1.(d)(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."***

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

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

(b) The Certificate of Conformance (CC) Number shall be:

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

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

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

To facilitate a review of the suggested amendments, additions, and changes to G-S.1. and its sub-paragraphs, the current HB 44 language has been marked up below to show all of the suggested modifications.

G-S.1. Identification. – All equipment, except weights and separate parts necessary to the measurement process but not having any metrological effect, shall be clearly and permanently marked for the purposes of identification with the following information:

(a) the name, initials, or trademark of the manufacturer or distributor;

(b) a model identifier that positively identifies the pattern or design of the device;

(1) The model identifier shall be prefaced by the word "Model," "Type," or "Pattern." These terms may be followed by the word "Number" or an abbreviation of that word. The abbreviation for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., No or No.). The abbreviation for the word "Model" shall be "Mod" or "Mod." Prefix lettering may be initial capitals, all capitals, or all lowercase.
[Nonretroactive as of January 1, 2003]
(Added 2000) (Amended 2001)

(c) a nonrepetitive serial number, except for equipment with no moving or electronic component parts ~~***and not built-for-purpose, software-based devices;***~~
[Nonretroactive as of January 1, 1968]
(Amended 2003 **and 201X**)

(1) The serial number shall be prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required serial number.
[Nonretroactive as of January 1, 1986]

(2) Abbreviations for the word "Serial" shall, as a minimum, begin with the letter "S," and abbreviations for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., S/N, SN, Ser. No., and S. No.).
[Nonretroactive as of January 1, 2001]

(d) the current software version or revision identifier for ~~***not built-for-purpose***~~ ***software-based electronic*** *devices;*
[Nonretroactive as of January 1, 2004]
(Added 2003) **(Amended 201X)**

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

(Added 2006)

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

(Added 2006)

(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.

(Added 201X)

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

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

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

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

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

(b) The Certificate of Conformance (CC) Number shall be:

(1) permanently marked on the device;

(2) continuously displayed; or

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

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

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

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

[Nonretroactive as of January 1, 2004 ***and 201X****]*

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

Discussion: It should be noted that these new ideas are in the Developmental stage, and are included here at the request of the Software Sector, which is seeking comments from interested parties. The Grain Analyzer (GA) Sector is asked to comment on the proposed changes to G-S.1. and G-S.1.1. shown above, specifically those that will most affect Grain Analyzers.

1. G-S.1.(d) and its sub paragraphs will require a software version or revision identifier that is directly and inseparably linked to the software itself; and

2. G-S.1.1. and its sub paragraphs will allow the identifiers required in G-S.1. to be either permanently marked or continuously displayed for software-based electronic devices. This includes the software version or revision identifier. It also allows display of the CC number to be accessible by menu or icon (as opposed to continuously displayed.)

3. If not either permanently marked or continuously displayed, the CC Number will have to be accessible through one or two levels of access identified by the labels, "Metrology", "System Identification", or "Help" in menu based systems, or for systems using icons, a metrology symbol ("**M**" or "**SI**"), or a help symbol ("**?**," "**I**," or an "**i**" within a magnifying glass). Note that this is not suggested to be the final list of valid options; the Software Sector would like to have feedback specifically on additional menu text/icon images that should be considered acceptable. The Software Sector feels that the number of acceptable options is less of an issue (within reason) than the fact that the list is finite.

Comments/Recommendations: The GA Sector found the wording of G-S.1.1. confusing. It seemed to say that the markings spelled out in G-S.1. were to be ***EITHER*** *permanently marked or continuously displayed on the device* ***OR*** *the Certificate of Conformance (CC) Number shall be either: permanently marked or continuously displayed, or accessible through menu or icon.* To some, this implied that the software version identifier did NOT have to be displayed. Others believed that the "***OR***" phrase meant that only the CC had three options for marking (permanent, continuously displayed, or accessible via menu or icon), and that the software/firmware version/revision number must be either permanently marked or continuously displayed.

Regardless of how the wording is interpreted, the GA Sector agreed that it was not practical to permanently mark or continuously display the software/firmware version/revision identifier for GMMs. The GA Sector recommends that G-S.1.1.(b) be amended to include accessing the software version or revision identifier by menu or icon. At present all NTEP GMMs are built-for-purpose. They all have permanently marked CC numbers. Software version/revision identifiers, however, are accessible by menu or icon. GMM displays are of limited size. Some existing devices don't have room to display the software version/revision identifier on every "screen". Hard marking of that identifier is not practical, because it precludes updating software without also replacing the hard-marked label.

7. Other Software Requirements That May Impact Grain Analyzers

The items under this heading are mostly excerpts from the Software Sector's March 2010 meeting summary intended to keep Grain Analyzer Sector Members informed of developmental software requirements that may impact grain analyzers. For more detailed information, see the complete Software Sector meeting summary at: http://www.ncwm.net/sites/default/files/meetings/software/2010/10_Software_Summary.pdf

a. Identification of Certified Software

[**Note:** This item is now partially covered by the provisional proposal to make G-S.1.(d) applicable to software-based electronic devices and by adding the following new sub-subparagraph **G-S.1.(d)(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."

Also the Software Sector recommends the following information be added to Pub 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).*

Software Sector Conclusions: The item needs additional discussion and development by the Software Sector. Outstanding questions: 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? Do we still have to be able to display/print the identifier if it is hard-marked?

b. Software Protection / Security

Background: The Software Sector derived a trial Pub 14 checklist based on the International Organization of Legal Metrology (OIML) checklist to verify that the software adequately protected against fraudulent modification as well as accidental or unintentional changes. The checklist has been distributed to current NTEP labs for use on a trial basis for new type approval applications.

Devices with embedded software TYPE P (aka built-for-purpose)			
	Declaration of the manufacturer that the software is used in a fixed hardware and software environment, and		Yes☐ No ☐ N/A ☐
	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.*		
	The software documentation contains:		
		description of all ~~**the metrologically significant**~~ functions, **designating those that are considered metrologically significant** ~~***OIML states that there shall be no undocumented functions***~~	Yes☐ No ☐ N/A ☐
		description of the securing means (evidence of an intervention)	Yes☐ No ☐ N/A ☐
		software identification	Yes☐ No ☐ N/A ☐
		description how to check the actual software identification	Yes☐ No ☐ N/A ☐
	The software identification is:		
		clearly assigned to the metrologically significant software and functions	Yes☐ No ☐ N/A ☐
		provided by the device as documented	Yes☐ No ☐ N/A ☐
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)			
	The *metrologically significant* software is:		
		documented with all relevant (see below for list of documents) information	Yes☐ No ☐ N/A ☐
		protected against accidental or intentional changes	Yes☐ No ☐ N/A ☐
	Evidence of intervention (such as, changes, uploads, circumvention) is available until the next verification / inspection (e.g. physical seal, Checksum, CRC, audit trail, etc. means of security)		Yes☐ No ☐ N/A ☐

Software with closed shell (no access to the operating system and/or programs possible for the user)			
	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 ☐
	Check whether the manufacturer has submitted a written declaration of the completeness of the set of commands		Yes☐ No ☐ N/A ☐
Operating system and / or program(s) accessible for the user:			
	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 W&M jurisdiction and type-specific parameters)		Yes☐ No ☐ N/A ☐
	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 ☐
Software interface(s)			
	Verify the manufacturer has documented:		
		the program modules of the metrologically significant software are defined and separated	Yes☐ No ☐ N/A ☐
		the protective software interface itself is part of the metrologically significant software	Yes☐ No ☐ N/A ☐
		the *functions* of the metrologically significant software that can be accessed via the protective software interface	Yes☐ No ☐ N/A ☐
		the *parameters* that may be exchanged via the protective software interface are defined	Yes☐ No ☐ N/A ☐
		the description of the functions and parameters are conclusive and complete	Yes☐ No ☐ N/A ☐
		there are software interface instructions for the third party (external) application programmer.	Yes☐ No ☐ N/A ☐

Software Sector Discussion: The labs again indicated they had not had a chance to utilize the checklist. The list was reviewed and some minor modifications to the checklist text were incorporated as shown above.

Software Sector Conclusion: Work is ongoing on this item with the intent that it eventually be incorporated as a checklist in Pub 14; again the labs are requested to try utilizing this checklist for any evaluations on software-based electronic devices.

c. Software Maintenance and Reconfiguration

Background: The Software Sector agreed that the two definitions below for 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.

The Software Sector also worked towards language proposed for defining the requirements for a Traced Update (currently considered as relevant for Pub 14):

For a Traced Update, an event logger is required. The logger shall be capable of storing a minimum of the 10 most recent updates. An entry shall be generated for each software update.

Use of a Category 3 audit trail is required for the Traced Update. If software update is the only loggable event, then the Category 3 audit trail can be limited to only 10 entries. A log entry representing a software update shall include the software identification of the newly installed version.

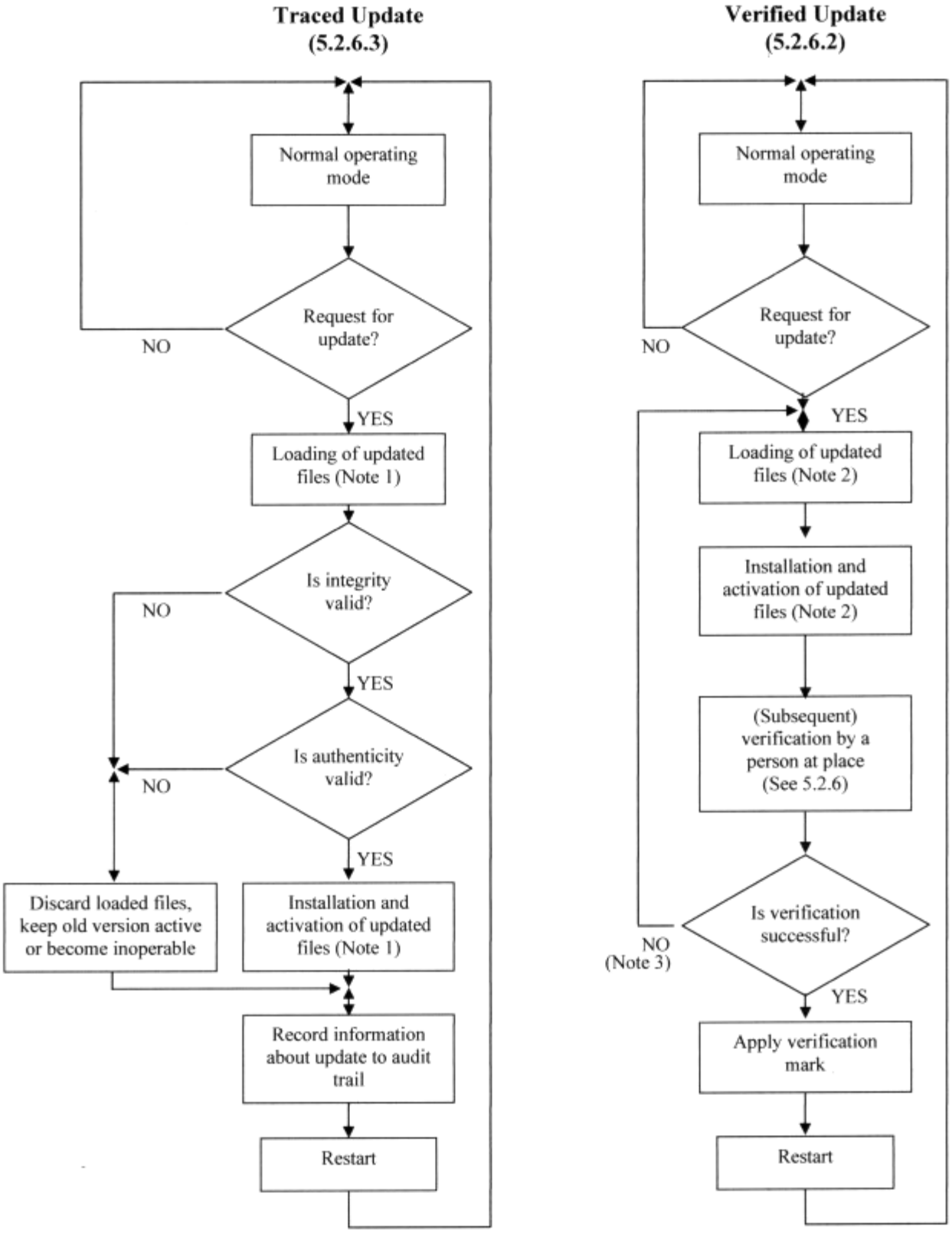
Software Sector Conclusions: The general consensus of the group after considering feedback from external interested parties is that a new G-S.9. with explicit requirements (for Metrologically Significant Software) is not necessary (nor likely to be adopted by the Conference), and that this requirement belongs in the Pub 14 lists of sealable parameters rather than in Handbook 44:

The updating of metrologically significant software shall be considered a sealable event.

Additional work is to be done to further develop the proposed text toward inclusion in Pub 14.

Grain Analyzer Sector Discussion: At its August 2009 meeting, the GA Sector questioned the need for a definition of "Traced Update." The "Traced Update" was initially intended to cover cases in Europe where the National Body controls a network of devices and wants to update all the devices simultaneously from a central location. Denmark and France do this with NIR Grain Analyzers. Even though individual states may still require that a device updated via a "Traced Update" it must be "returned to service" by a registered serviceperson before it can be used, the Sector may want to consider adopting "Traced Update" requirements for all Category 3 Grain Analyzers. The device is still subject to later inspection by state Weights and Measures personnel. By designing to the requirements for "Traced Update", states might be encouraged to allow devices updated to those requirements to be returned to service without requiring a visit by a registered serviceperson.

Logic flow charts illustrating "Traced Update" and "Verified" update are shown on the following page.



Software Update Procedure – from OIML D 31:2008 (E)

Notes:

(1) In the case of a Traced Update updating is separated into two steps: "loading" and installing/activating". This implies that the software is temporarily stored after loading without being activated because it must be possible to discard the loaded software and revert to the old version, if the checks fail.

(2) In the case of a Verified Update, the software may also be loaded and temporarily stored before installation, but depending on the technical solution loading and installation may also be accomplished in one step.

(3) Here, only failure of the verification due to the software update is considered. Failure due to other reasons does not require re-loading and re-installing of the software, symbolized by the NO-branch.

Note: GA Agenda Item 7 was for information only. No action was taken. No comments or recommendations were made

8. Report on OIML TC17/SC1 R59 "Moisture Meters for Cereal Grains and Oilseeds"

Background: This item was included on the Sector's agenda to provide a summary of the activities of OIML TC 17/SC 1. In October 2008, the Secretariat of TC 17/SC 1 was jointly allocated to China and the United States. The Co-Secretariats (China and the United States) are working closely with an international work group (IWG) to revise OIML R 59 "Moisture meters for cereal grains and oilseeds." The 5 CD of **OIML R 59**, revised to comply with OIML's Guide ***Format for OIML Recommendations*** and to incorporate tests for the recommended disturbances of **OIML D 11** ***General Requirements for Electronic Measuring Instruments,*** was distributed to the Subcommittee in February 2009.

Comments: Ms. Diane Lee, NIST/WMD, reported that comments on the 5 CD of **OIML R 59** have been received by 10 countries, including the United States. Ms. Lee is working on a draft 6 CD based on those comments. It will reflect the U.S. recommendation to remove the Sand & Dust test (one of the disturbance tests of OIML D 11), on the basis that the sand and dust concentration specified for that test far exceeds the concentrations encountered by GMMs in normal use. The equipment diagrams of 5 CD will be replaced by generic block diagrams and, at the request of Japan, a block diagram will be added for a resistance type GMM.

A meeting of TC 17/SC 1 to review the draft 6 CD will be held in Orlando, Florida, following the CIML meeting. Ms. Lee noted that, in addition to herself, TC 17/SC 1 meetings are usually attended by Dr. Pierce, Ms. Brenner, and Ms. Cassie Eigenmann. She will arrange a conference call to go over the draft 6 CD before the changes are made permanent for discussion at the meeting.

Mr. Richard Cantrill, AOCS, recommended that TC 17/SC 1 become aware of the work that ISO Food Group Technical Committees, TC 34/SC 2 – Oil Seeds, and TC 34/SC 4 – Cereals and Pulses, have done that relates to the use of moisture meters.

Editor's Note: The related Standards are:

ISO 7700-1:2008 – Checking the performance of moisture meters in use
– Part 1: Moisture meters for cereals
ISO/DIS 7700-2 – Checking the performance of moisture meters in use
– Part 2: Moisture meters for oilseeds
(ISO/DIS 7700-2 is a Draft International Standard. When approved, it will replace ISO 7700-2:1987.)

Editor's Note: At the September 28 - 29, 2010, TC 17/SC 1 meeting in Orlando, Florida, the participants reviewed a preliminary copy of OIML R 59 CD and comments to R 59 CD. Changes to R 59 6 CD will include the changes that were agreed to at the September 2010 meeting.

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

Background: This item was included on the Sector's agenda to provide a summary of the activities of OIML TC 17/SC 8. A new subcommittee was formed to study the issues and write a working draft document "Protein Measuring Instruments for Cereal Grain and Oil Seeds." Australia is the Secretariat for this new subcommittee. A TC 17/SC 8 meeting was hosted by NIST in September 2007 to discuss the 2 CD. Discussions on 2 CD dealt mostly with maximum permissible errors (MPEs) and harmonization of the TC 17/SC 8 Recommendation for protein with the TC 17/SC 1 Recommendation for moisture. The Secretariat distributed a 2 CD N6 of the document in February 2010. Comments were due in May 2010.

Discussion/Comments: Ms. Lee, NIST/WMD, reported that 2 CD N6 reflects major changes to harmonize with R 59-5 CD. A meeting of TC 17/SC 8 will be held September 27 - 28, 2010, in Orlando, Florida to address the comments to 2 CD N6.

Dr. Pierce noted that there is still resistance to accepting the U.S. recommendation that two instruments be submitted for type evaluation. He asked those who had been with the Sector from the early days, to explain what had led the Sector to decide that type evaluation would require two instruments as opposed to one or three. At least two Sector members remembered the reasoning: It is easy to make one instrument. The problem is to make two that read alike. The Sector originally considered three instruments but that was too expensive. Three would have been ideal, because if one fails during testing, you usually have two that agree with each other, so you know immediately which one is wrong.

GIPSA has seen numerous instances in NTEP testing where one test instrument passes a test and the second instrument does not (for the NTEP Power Supply test, since 1994, in 24 % of the tests one instrument failed while the other passed; in 3 % of the tests both instruments failed). The failures appear not to be random events. They appear to identify legitimate deficiencies.

Editor's Note: At the September 27 - 28, 2010, TC 17/SC 8 meeting comments to the Recommendation on Protein Measuring Instruments for Cereal Grain and Oil Seeds 2 CD were reviewed. It was agreed at this meeting that two instruments will be submitted for OIML type approval. This agreed change and other changes from the September 2010 meeting will be included in 3 CD.

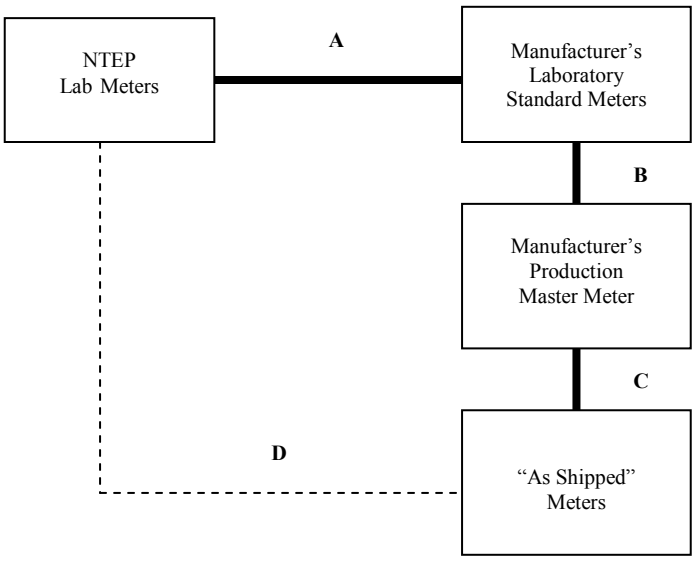
10. Standardization of Grain Moisture Meters – Traceability of GMMs used in Meter to Like-Meter testing.

Background: This item is a carry-over from the Sector's August 2009 meeting (Item 9.5). For NTEP meters HB 44 permits meter to like-meter testing using "Properly Standardized Reference Meters". Mr. Karl Cunningham, Illinois Department of Agriculture, Weights and Measures, asked for a definition of a "Properly Standardized Reference Meter". He also wanted to know what criteria these "Reference Meters" must meet.

He was referred to **Section VI. Standardization of Instruments** in the GMM chapter of Pub 14 that shows the relationship and maximum permissible errors between the NTEP Lab meters, Manufacturer's Laboratory Standard Meters, Manufacturer's Production Master Meter, and "As Shipped" meters. It was explained that a properly standardized reference meter for a Service Company should have the same traceability to the NTEP Lab Meters as the Manufacturer's Production Master Meter has.

Section VI. Standardization of Instruments in the GMM chapter of Pub 14 requires manufacturers to demonstrate that their methods for standardizing units in production result in as "shipped" units, which agree with the corresponding NTEP Laboratory units (path D in the accompanying **Figure 1**) within ± 0.3 x the HB 44 acceptance tolerance. They are also required to show that the mean moisture difference between Manufacturer's Laboratory Standard Meters and the corresponding NTEP Laboratory Meters (path A in the accompanying **Figure 1**) does not exceed ± 0.2 x the HB 44 acceptance tolerance.

Figure 1



During a discussion of potential agenda items for the Sector's 2010 meeting, Dr. Pierce, FGIS/GIPSA, representing the NTEP Participating Laboratory for Grain Analyzers, suggested that the Sector may want to explore how the NTEP program (or lab) can assist manufacturers who are asked to demonstrate traceability of field instruments back to the air oven reference method. The NTEP Lab has manufacturers' instruments in the NTEP Phase II program that are directly traceable to the GIPSA air oven reference lab. There is, however, no documentation demonstrating alignment of NTEP instruments with manufacturers' master instruments or field instruments. The NTEP lab is not involved in this process. There are no criteria for the grain types, the number of analyses, or the number of samples that should be used in side-by-side testing.

The Sector Co-Technical Advisor suggested that a first step in acquiring documentation demonstrating alignment of NTEP instruments with manufacturers' master instruments or field instruments would be adding language to the NTEP Application to require submission of the documentation required by §VI., and adding a checklist of the Required Documentation to the existing GMM Checklist of Pub 14.

A related issue, mentioned by Dr. Pierce, was authorized repair facilities providing states with documentation that their "standard" instrument is traceable to the air oven reference. He was of the opinion that this was not directly an NTEP lab issue, but believed that manufacturers should be able to trace these standards back to NTEP Phase II instruments.

Proposed: Amend the Application Instructions Section of the Grain Analyzer NTEP Application as shown below:

- **Submit details of procedures and tests for maintaining reference meters and standardizing units in production to meet the requirements of §IV of the GMM Chapter of Pub 14.**

And insert the following Check List of Required Documentation just in front of the **General** section [but still under the "Checklist" Heading in the Table of Contents] of the GMM chapter of Pub 14:

Required Documentation (Refer to NCWM Publication 14, Grain Moisture Meter Chapter, §VI. Standardization of Instruments)			
Doc1.	**Manufacturer has submitted specific details of the proposed test procedures to be used for the comparison between their reference standard instruments and instruments of like type in the NTEP Participating Laboratory.**		**Yes☐ No☐ N/A☐**
	(a)	**Comparisons will be made "side-by-side**	**Yes☐ No☐ N/A☐**
	(b)	**Comparisons will be made by an exchange of grain samples**	**Yes☐ No☐ N/A☐**
Doc2.	**Manufacturer has shown that the mean moisture difference between Manufacturer's Laboratory Standard Meters and the corresponding NTEP Laboratory Meters (path A in figure below) does not exceed ± 0.2 x the Handbook 44 acceptance tolerance.**		**Yes☐ No☐ N/A☐**
Doc3.	**Manufacturer has demonstrated that its methods for standardizing units in production result in "as shipped" units which agree with the corresponding NTEP Laboratory units (path D in Figure 1 of §VI) within ± 0.3 x the Handbook 44 acceptance tolerance.**		**Yes☐ No☐ N/A☐**
Doc4.	**Manufacturer has also demonstrated that once units are standardized, moisture results between units of like type will not exceed these tolerances when a grain calibration change is made.**		**Yes☐ No☐ N/A☐**

Discussion: Dr. Pierce suggested that there are two issues being presented here:

1. For Phase I, a clarification of what information is being obtained at the time of initial type evaluation. At present, manufacturers are asked for a general description of the process (not all the details) they intend to use to standardize instruments.

2. For Phase II, whether there should be some kind of semi-official document signed by the NTEP laboratory attesting to the fact that a side-by-side test (or by grain sample exchange) demonstrated that manufacturer "A's" working masters line up with the two calibration instruments at the NTEP laboratory within 0.x % moisture. This might be issued each year (or every two years) as part of the Phase II program. If the laboratory provided this service, Dr. Pierce noted that they would have to specify the test procedure that had been used including the grain type(s), number and sequence of drops, etc.

When manufacturers were asked if this addition to Phase II was needed, Mr. Tim Kaeding, Perten Instruments, responded that, with the exception of an NTEP lab issued certificate, what Dr. Pierce described was very much like what they were already doing. Perten takes their working standard instruments to the NTEP lab, performs a side-by-side comparison with the NTEP instruments using corn, soybeans, and wheat; analyzes the data; determines that they match statistically, and prepares a report showing the traceability of their working standards to the corresponding NTEP instruments lab. This has apparently satisfied the Illinois Department of Agriculture's request for traceability.

Ms. Eigenmann outlined the procedures used by DICKEY-john. Twice a year the base parameters of three laboratory standard meters, which never leave DICKEY-john's temperature and humidity controlled laboratory, are measured to ensure that they are aligned. Records are kept of every test, adjustment, etc. performed on the lab standards. Three working standards, used on the production line, are taken to the laboratory once a month for a check against the three lab standards. In side-by-side comparisons of six drops of grain per unit, the average moistures must agree within 0.08. Similarly, three Product Service working standards are brought to the laboratory twice a year to be checked against the lab standards using the same criteria as the production line standards. Additionally, two transfer standards are checked against the lab standards. These are held to a tighter tolerance than 0.08. The transfer standards are hand carried to Kansas City, Missouri, and checked against all the like instruments at FGIS (including the two NTEP lab units). Anyone requiring a document showing comparative data between a GAC 2100 and the lab standards can bring their GAC 2100 to DICKEY-john's moisture lab for checking.

With no one from Steinlite to report, Dr. Pierce recalled that Steinlite typically picked up their two NTEP lab meters and took them back to Atchison, Kansas, for testing.

With manufacturers already running comparative tests and providing the requested documentation, it didn't appear that the NTEP laboratory needed to be involved. Manufacturers were not in agreement that the testing be standardized. Some questioned whether the testing could be standardized because it would be technology dependent. Others saw some merit in standardizing comparative tests using specified grains and procedures (number and sequence of drops, etc.) and of standardized reports. No action was taken on this issue.

Some Sector members objected to the proposed amendments to the Grain Analyzer NTEP Application and the GMM checklist. Manufacturers were of the opinion that they were already providing the information required in the Section VI of the GMM Chapter of NCWM Pub 14. Further, Section IV relates more to Phase II than to Phase I. No Phase I testing is required by Section IV, so the addition of checklist items was not required.

Decided: The Sector decided that the proposal to amend the Application Instructions Section of the Grain Analyzer NTEP Application, and to insert a Checklist of Required Documentation in the Checklist of the GMM chapter of Pub 14 was a Phase II issue not a Phase I issue. The Proposal will be withdrawn.

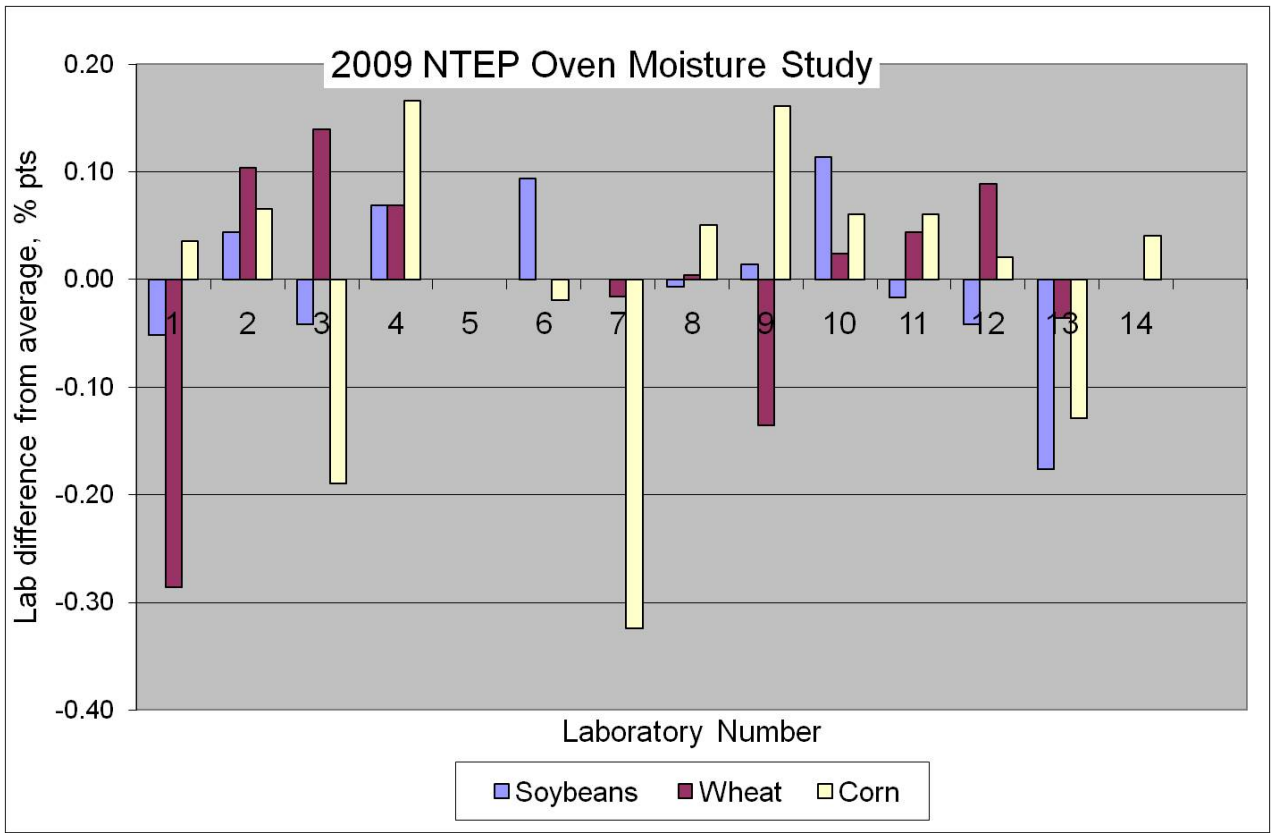
11. Air-Oven Collaborative Study – Analysis of results

Background: At its August 2008 meeting, the Sector agreed that a collaborative study was long overdue. It was also noted that such a study addresses the measurement traceability requirements of **ISO 17025** ***General requirements for the competence of testing and calibration laboratories***. Mr. Cunningham subsequently agreed that the State of Illinois Moisture Meter Laboratory would serve as the "pivot" laboratory. At the August 2009 meeting, he reported that 14 laboratories participated in this study. Participants included: USDA/GIPSA (as reference laboratory), Arkansas, Colorado, Illinois, Iowa, Maryland, Mississippi, Missouri, North Carolina, South Carolina, Wisconsin (corn only), Wyoming, and DICKEY-john. Perten was sent samples but didn't return results. With the exception of one or two outliers, results were fairly good. Histograms showing the distribution of Lab error (Participant Lab result minus Reference Lab result) for each of the grain samples were presented (see August 2009 Sector Meeting Summary).

Discussion: Dr. Charles Hurburgh, Iowa State University, was unable to attend the Sector meeting. He forwarded a statistical analysis of the results, and supplied the following comments:

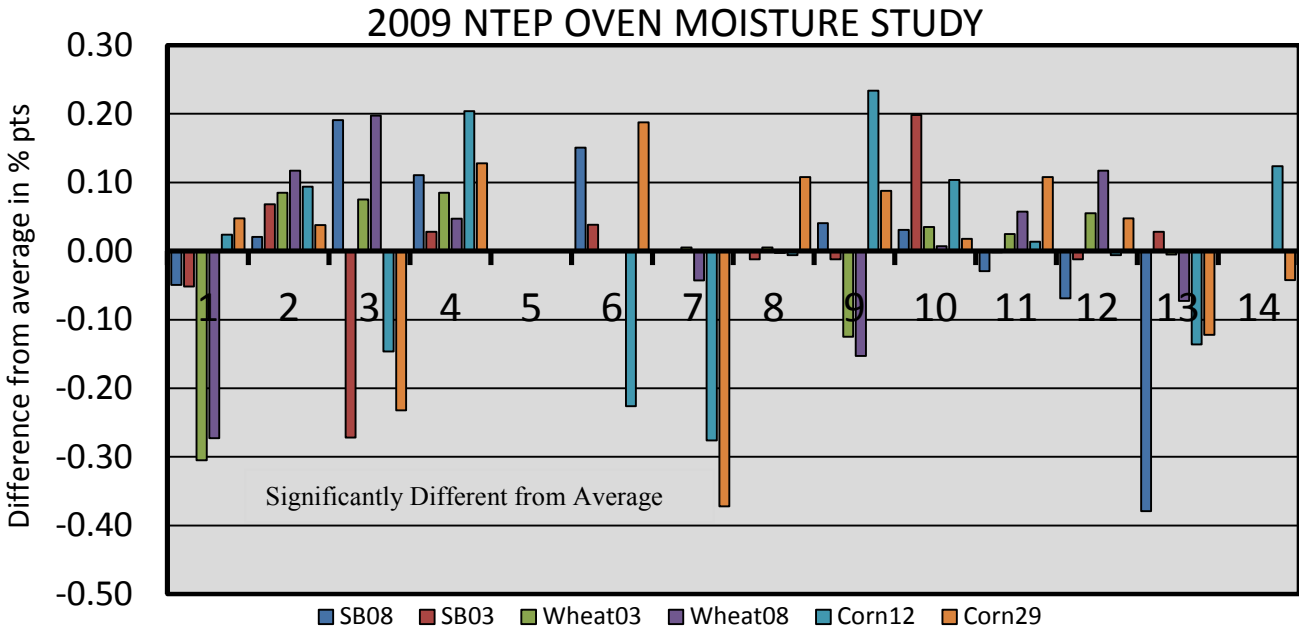
> The results were quite good. Two outliers were removed. Outliers are detected by calculating the SD with the questionable point removed. If the questionable point is 3 SDs out after being removed, it is considered an outlier. When you don't have many data points this prevents a bad data point from making the SD very large and protecting itself, so to speak. Standard deviations across labs of less than 0.20 percentage points are good. The sample handling and prep were clearly done well.
>
> Overall, the individual Labs did well; there were only two cases where the lab average was significantly different from the average of the labs, but none of the information values (temperatures, humidity, etc.) seemed to correlate with errors. No attempt was made to analyze the information data; it would be helpful in the future to require all the temperatures in one type of units (C or F), and all the times in minutes, and so on.

The chart below shows the deviation from the average. Most are within 0.2 % of the Average.



Discussion: Several Sector members asked why the lab difference from average was averaged across two samples of each grain type. They wondered what the chart would look like if results were shown for individual samples. The concern was that in some cases the averaging over two samples might lead to significantly understating errors.

Several weeks after the Sector's meeting, the Co-Technical Advisor prepared a chart showing the lab difference from average for each individual sample (see chart following). One of the most dramatic differences showed up in Lab 3's results for soybeans. A veraged over two samples, the difference was only −0.04, while individual differences from individual averages were 0.19 for SB08 and −0.27 for SB03. A similar phenomenon was observed in Lab 6's results for corn. A veraged over two samples, the difference was only −0.02 while the individual differences were −0.23 for Corn12 and 0.19 for Corn29.



12. Proficiency Testing

[Submitted by Ms. Amy L. Johnson, SQT Program Manager, American Oil Chemists Society (AOCS)]

Background: At the Sector's August 2009 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.

Several years ago, the AOCS in conjunction with the United Soybean Board (USB) established the AOCS-USB Soybean Quality Traits Analytical Standards Program (SQT), a system of verification of analytical measurements. This program provided the infrastructure for the generation of reliable analytical results at all levels of the soybean industry, by establishing industry-wide acceptance of analytical methods and protocols and their implementation under internationally accepted quality management standards. The AOCS has proposed the addition of an air-oven/grain moisture meter proficency testing (PT) series to their Analytical Standards Program (ASP). Proficency testing is a continuous program, samples are sent out in regular intervals (e.g., 2 to 4 times/year). Participants are able to join on a continuous basis.

Discussion: 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 SQT program, GIPSA air-oven results could be reported for comparison, if desired.

The Sector decided that a program that included distribution of two samples each of corn, wheat (preferably of one type), and soybeans per year would be adequate. A final report by mid-July is desirable, so sample distribution would have to take place in early spring (March – April). The annual cost of such a program was estimated to be in the range of $80 to $100 per participant.

Sector , Ms. Eigenmann, asked Ms. Johnson to put together a formal proposal based on the above criteria. Ms. Johnson will contact all those on the GA Sector mailing list, as well as those on the NIST/WMD list of state W&M officials interested in grain moisture with details of the proposed program.

13. Time and Place for Next Meeting

The next meeting is tentatively planned for Wednesday, August 24 and Thursday, August 25, 2011, at the Chase Suites by Woodfin at Kansas City International Airport in Kansas City, Missouri. Sector members are asked to hold these days open pending determination of agenda items, exact meeting times, and meeting duration. Final meeting details will be announced by early June 2010.

If you would like to submit an agenda item for the 2011 meeting, please contact any of the following persons by June 1, 2011:

Mr. Jim Truex, NTEP Administrator at jim.truex@ncwm.net
Ms. G. Diane Lee, NIST Technical Advisor, at diane.lee@nist.gov
Mr. Jack Barber, Co-Technical Advisor, at barber.jw@comcast.net

14. Future Direction of Moisture Measurement Technology

The Grain Inspection Advisory Committee (GIAC) meets twice annually to advise GIPSA on the programs and services it delivers under the U.S. Grain Standards Act. Recommendations by the committee help GIPSA to better meet the needs of its customers who operate in a dynamic and changing marketplace.

The committee is comprised of 15 members and 15 alternate members appointed by the Secretary of Agriculture. Committee members and alternates represent all segments of the grain industry. They include grain producers, processors, merchandisers, handlers, exporters, consumers, grain inspection agencies, and scientists. Committee members serve without compensation, but are reimbursed for travel expenses.

Meetings typically follow a format of a day of presentations followed by a morning during which committee members digest the material they have heard to produce resolutions addressing the significant issues. The resolutions are subjected to a vote by the committee. Those that are adopted are taken seriously by GIPSA's administer in considering how to respond to these resolutions.

On June 16, 2010, Dr. Funk, GIPSA/FGIS Associate Director for Methods Development, made a presentation to the GIAC entitled, "Future Direction of Moisture Measurement Technology." He repeated this presentation on August 26, 2010, at the NTETC Grain Analyzer Sector meeting in Kansas City, Missouri. Following is a digest of Dr. Funk's presentation.

In November of 2009 the GIAC approved the following resolution:

> The Advisory Committee recommends that GIPSA evaluate the current moisture calibration for high moisture rough rice for accuracy when compared to the air oven reference.

The FGIS Annual Calibration Study was already doing this. Each year approximately 1100 samples are collected to evaluate and enhance official moisture meter accuracy. For 15 major grains, all NTEP-certified models are tested with the same set of grain samples. Grain calibrations are optimized to the most recent three years of data with consideration of abnormal conditions. To minimize "hunting", calibrations are changed only if certain error thresholds are exceeded, but there are problems. The long gain rough rice accuracy for 2007 - 2009 crops shows a large scatter above 20 % moisture and for 2009 a very strange pocket of data between 14 % and 17 % moisture with significant negative bias. Similar problems appeared in corn. The crop year 2009 was a year of extremely low quality and low test weights. Many samples were well under 50 pounds per bushel.

The conclusions reached from the 2009 crop calibration study revealed:

- Year-to-year differences contribute significant instability to GMM calibrations.
- Rice is one of the more difficult grains for accurate moisture measurements.
- Growing conditions in 2009 resulted in some grain samples not being measured accurately by current official moisture meters.
- It is impossible to significantly improve the official meter's accuracy for the "problem" samples without degrading overall accuracy.

So GIPSA's response to the GIAC Resolution was that FGIS is continually evaluating and trying to improve moisture calibrations. FGIS has expert knowledge of moisture measurement technologies and the current official technology is doing the best that it can. If the market needs better performance, FGIS needs to select and implement different technology. If FGIS is going to implement different moisture technology, it needs to happen soon.

New technology offers improved accuracy, better stability over time and crop conditions, easier calibration development, reduced support cost, and provides competition (it can be duplicated by any manufacturer).

It needs to happen soon to avoid being caught in a technology "rut" for decades as with the older dielectric instruments which required look-up tables. It needs to happen soon to be able to utilize current FGIS expertise before it is depleted by retirements. It needs to happen soon to create and implement a sustainable official moisture measurement system based on up-to-date technology.

New technology will be selected using the following steps:

- Develop and prioritize criteria for the selection.
- Develop a procurement document.
- Solicit proposals.
- Evaluate proposals and submitted performance data.
- Conduct further testing of the proposed technologies.
- Announce selection and establish contract(s).
- Develop and validate official standardization processes.
- Procure new moisture measurement instruments.
- Conduct a pilot test to validate system readiness for the transition.
- Implement the switch to the new instrumentation.

The criteria used to select a new official meter will most likely include the following criteria used in 1997:

- Best value to the government
    - Procurement costs
    - Support costs
- NTEP certification

- Accuracy over moisture and temperature ranges
- Repeatability
- Suitability for all grain type officially tested
- Suitability for automation
- Consistency among units
    - Transferability of calibrations
    - Precision of standardization
    - Ease of standardization
    - Stability over time

Other possible criteria might include:

- Speed of test
- Multiple-factor capability
- Accuracy of tests on abnormal samples such as "green soybeans"
- Availability of multiple sources for equivalent technology
- Prior commercial acceptance of technology

Dr. Funk offered the following time line for fully implementing a new technology:

- October 2010 – Agency decision on whether to pursue new moisture technology
- June 2011 – Develop criteria and procurement documents and issue solicitation for proposals
- February 2012 – Announce decision
- May 2013 – Implement new technology for initial grains
- September 2013 and later – Implement new technology for other grains.

Following his presentation to the GIAC, the following resolution was adopted:

> The Advisory Committee recommends that GIPSA/FGIS move forward with expediency to determine the feasibility and selection of a new federal standard moisture measurement technology and/or instrument(s) for use in the official system.

Following Dr. Funk's presentation to the GA Sector, he conducted a question and answer session. Some of the questions and Dr. Funk's responses are shown below:

Question: Will the new technology require any changes to existing HB 44 or Pub 14 requirements or procedures?

Answer: Basically, no … and yes. We have choices of technology, but the technologies out there are already represented in the NTEP program. We're not going to select a technology that hasn't proven itself. If

it's not out there as a commercial technology that's proven itself in the marketplace, we're not going to consider it. In the NTEP program we have two technologies represented: dielectric RF methods and NIR methods. Right now we have two instruments that represent the technology I'm talking about that have been NTEP certified. That was the trigger point at which we could consider adopting a new technology. That is not to say that is the technology we are going to select, but until we had proven that we could have two instruments using that technology we were not ready to even consider adopting a new technology.

Question: You've answered the "Yes" half of the previous question. Could you please address the "No"?

Answer: The answer is, to the extent that industry migrates to this technology hopefully we will get to the point where we don't need a Phase II evaluation. When all USDA instruments are using the same calibrations, and they are not being yanked around year by year, we may be looking to a more technical evaluation of instruments where we just evaluate the ability of an instrument to accurately measure density corrected dielectric constants. If the new technology is widely accepted we may get to a point in 5 to 10 years where the NTEP looks significantly different from what it is now. The current five-year interagency agreement may be the last one.

[**Note:** Dr. Pierce commented that he believed they were committed to finishing the current five-year agreement.]

Question: Do you think this new technology will eliminate a lot of complaints we get about such things as the "rebound" effect in soybeans?

Answer: It will help. It's not going to eliminate green soybeans effect nor will it eliminate test weight sensitivity in corn, but it will reduce the effects. It has about half the effect as the current official meter. I'm not saying this is the best technology possible. The goal is not to come up with the best possible technology. The goal here is to come up with a simple, well documented, public technology that anybody can use successfully and get equivalent results. We do want it to be accurate, and it is accurate. We want it to be stable, and it is much more stable. Is it perfect? Absolutely not! There is a microwave technology out there that is probably very good, but it also requires an exclusive license. It is not open for anyone to use royalty free. The goal here is to have something that is royalty free by anybody that wants to make it.

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Appendix B

National Type Evaluation Technical Committee (NTETC) Measuring Sector Annual Meeting

October 1 - 2, 2010
Columbia, South Carolina

Meeting Summary

Carry-over Items: ..... NTEP - B2
1. Table of Key Characteristics of Products in Product Families for Meters Table ..... NTEP - B2
2. Testing Meters Made of Different Materials ..... NTEP - B4
3. Add Testing Criteria to NTEP Policy U "Evaluating electronic indicators submitted separate from a measuring element" ..... NTEP - B6
4. Policy C - Product Family Table – Change in Upper Limit for Oxygenated Blends – Note 4 ..... NTEP - B9
5. Electronic Linearization for Positive Displacement Meters ..... NTEP - B10

New Items: ..... NTEP - B13
6. Code Reference S.1.6.1. Indication of Delivery – Reference to Indicator Reset ..... NTEP - B13
7. Development of Water Meters Checklist ..... NTEP - B14
8. Development of Hydrogen Gas-Measuring Devices Checklist ..... NTEP - B16
9. Next Meeting ..... NTEP - B17

Additional Items as Time Allows: ..... NTEP - B17
10. General Code, Section 1.10, Paragraph G-S.1. Marking (Software) (S&T Carryover Agenda Item) ..... NTEP - B18
11. G-S.8.1. Provision for Sealing Electronic Adjustable Components, G-S.8.1. Adjustment Mode Indication, and Definitions for "Adjustment" and "Adjustment Mode" (HB 44 Section 1.10. General Code) *(S&T Agenda Carryover Item)* ..... NTEP - B22
12. G-A.6. Nonretroactive Requirements (Remanufactured Equipment) (Handbook 44 Section 1.10. General Code) *(S&T Agenda Carryover Item)* ..... NTEP - B22
13. Product Depletion Test Paragraph T.4. (HB 44 Section 3.31. Vehicle-Tank Meters) *(S&T Item – New Item)* ..... NTEP - B24
14. N.5.1. Verification of Master Meter Systems for Testing of Farm Milk Tanks (Handbook 44 Section 4.42 Farm Milk Tanks) *(S&T Item – New Item)* ..... NTEP - B26
15. S.2.6. Thermometer Well – Proposed New Paragraph for Handbook 44 Section 3.31. Vehicle-Tank Meters Code (S&T) ..... NTEP - B27

Appendices:
Appendix A. Proposed Revisions to Policy C – Product Family Table (Agenda Item 1) ..... NTEP – B29

Appendix B. Action Items Table ..... NTEP - B41

Appendix C. List of Attendees at 2010 Measuring Sector Meeting ..... NTEP - B44

Carry-over Items:

1. Table of Key Characteristics of Products in Product Families for Meters Table

Source: Carryover Item from 2006 - 2009 Measuring Sector Agendas

Purpose: For the past several years, the Measuring Sector (Sector) has been working to revise the "Product Family" tables in National Conference on Weights and Measures (NCWM) Publication 14 (Pub 14) with the goal of clarifying the tests to be conducted and products to be referenced on a National Type Evaluation Progam (NTEP) Certificate of Conformance (CC) based on NTEP testing. This item is included on the agenda to allow for review of a recent revision to the tables and to determine what additional work is needed.

Background: Since 2006, the Sector has been working to develop and agree upon revisions to the NTEP Technical Policy on Product Families for Meters. The Sector has considered multiple iterations of the table and various formats with the goal of providing NTEP laboratories and manufacturers with guidelines that will help to improve the clarity and consistency of application of product family criteria. Please see the 2006 - 2009 Measuring Sector Meeting Summaries for details.

At the end of its 2009 meeting, the Sector reached the following conclusion:

> Of three alternative versions of the table presented to the Sector during its 2009 meeting, the approach in which technologies are addressed in separate tables was viewed as a more appropriate approach. (**Note:** An example of this format is illustrated in Appendix C to the Sector's 2009 Meeting Summary in a draft table prepared by Mr. Henry Oppermann, W&M Consulting, and further revised and reformatted by Mr. Michael Keilty, Endress and Hauser.)
>
> Mr. Keilty agreed to continue to shepherd this work, coordinating with those who have expressed interest in this issue and welcoming additional input from other Sector members. Work was to be done to integrate the separated technology proposal with that presented at the 2009 Sector meeting. This newly edited version will be circulated among Sector members and discussed with those members who are able to attend the January 2010 NCWM Interim Meeting. Based on any comments received, additional revisions may be made prior to presenting a revised draft to the Sector at the 2010 Sector meeting. The goal is to develop a version for inclusion in Pub 14, in which it is easy to understand which tests and procedures must be followed for type evaluation testing.

Since the 2009 Sector meeting, Mr. Keilty has continued working with members of the Sector to refine the table. Mr. Keilty reported receiving suggestions at the January 2010 NCWM Interim Meeting to:

(1) align the products in each horizontal row; and
(2) insert a column for conductivity to the magnetic flow meter column.

Based on suggestions received and discussions at the last Sector meeting, Mr. Keilty made revisions to the proposed table as outlined in Appendix A to the agenda. The revisions also include the addition of product conductivity characteristics based on data received from Mr. Dmitri Karimov, Liquid Controls. Mr. Keilty noted that the first request to align product rows could not be easily accomplished and would significantly increase the page length of the table to make it unwieldy.

Discussion: The Sector was asked to review and comment on proposed changes to NTEP Technical Policy Section C. as shown in Appendix A to the Sector's 2010 Agenda. Sector Chairman, Mr. Keilty, indicated that there has been a lot of work done since the Sector's 2009 meeting. He proposed that the Sector consider adoption of the table included in the appendix and asked the Sector members present for comment on the latest draft.

Mr. Marc Buttler, Emerson Process Management - Micro Motion Inc., commented that the terminology used in the text of Policy C and the associated table may need to be examined more closely to ensure consistent use and understanding. In particular, it would be helpful to have a clear definition for family and category, and to have a

clear understanding of the difference between subgroups, families, and other terms. Such clarifications would help to ensure uniform understanding and application of the technical policy in the future. As an example of how the criteria could be misinterpreted, Mr. Buttler noted that the Test B definition refers to the CC covering "all products and categories" listed in the table within the specific gravity range listed. Interpreted literally, this would mean that even product categories included under Test D would be included on the CC, and he believes this interpretation is incorrect. Further, under the mass flow meter column, Test B refers to families and there is a similar reference under Test D. These tests are intended to provide coverage within families of products, which are still not completely defined. Likewise, if you consider Test F under magnetic flow meters, there is a reference to families. However, there is no definition or reference to that term elsewhere. Modifying the table by adding definitions for the terminology would help clarify the use of the table. Mr. Buttler noted that, if we can agree on the meaning of the terms, the text in the table and associated policy could be modified rather easily.

Some questions regarding specific values referenced for given products were raised and some modifications were made to the table during the course of the discussions. Additionally, Mr. Dennis Beattie, Measurement Canada (MC), noted that there are some products for which no values are listed. Mr. Keilty acknowledged that, for some products, we don't have the data available, just like we don't have information for conductivity in some instances. The Sector acknowledged that values for specific product characteristics can be added as that information becomes available, and noted that additional products can also be added over time. However, this is a start in providing the NTEP laboratories and manufacturers with additional data and guidance in assessing where particular products would fall in the families table.

Mr. Buttler questioned whether it is necessary to specify the type of viscosity being referenced under positive displacement meters. He also noted that it is necessary to consider the product characteristic relative to the metrology of the specific meter type. Mr. Beattie commented that one of Measurement Canada's engineers preferred the use of the term kinematic throughout the table. He also noted that they normally rate meters in centistokes as a more common term.

Sector Technical Advisor, Ms. Tina Butcher, National Institute of Standards and Technology (NIST) Weights and Measures Division (WMD), suggested that consideration be given to using the same format for all meter technologies to make it easier to see the demarcation between product categories. For example, mass flow meters and magnetic flow meters include columns with "typical products," "specific gravity," and "product category" whereas, positive displacement meters and turbine meters list "product category" in rows at various points in the table. Recognizing that page space might be an issue, consideration might be given to using the same format for all technologies.

At the conclusion of discussions on this item during the first day of the meeting, the Sector agreed that additional work might be done to the table, including assessing the use of the term kinematic (viscosity) throughout the document, considering deleting the term kinematic at the heading of the turbine meter column, and/or modifying footnote 5 to clarify its application. Mr. Buttler and Mr. Keilty volunteered to work on the additional changes to the table and present them for review by the Sector the following day.

One the second day of the 2010 Sector meeting, there was additional discussion of the table as modified overnight by Mr. Keilty and Mr. Buttler. The Sector further modified the table during the meeting and more discussion ensued. The Sector also agreed to modify the denominator of the equation defining kinematic viscosity as shown in Appendix A, to this meeting summary. Mr. Keilty summarized how the table was developed over the past couple of years, noting that the content extracted from the original tables has not changed much in the sense that ranges of products can be covered with a specific test(s); however, we have identified groupings with regard to specific products. He proposed that the Sector at least come to agreement on the reformatted structure, as shown in the table, with revisions during the meeting and asked the Sector for a vote.

Decision: After making revisions to the version of the table distributed with the Sector's agenda and lengthy discussion, the Sector agreed by a formal vote to recommend inclusion of the revised table (shown in Appendix A to this meeting summary) in the next edition of Pub 14. The results of the vote are as follows:

Yes	**13**
No	**1**
Abstain	**0**

The Sector also agreed to move the heated products to a single section in the final version of the table.

NTEP Director, Mr. Jim Truex noted that the table does not address brine used as a de-icing solution for roads. The NTEP Measuring Labs discussed this during their meeting on October 1, 2010, and agreed that this product is to be considered in the category of clear liquid fertilizers. However, Mr. Truex noted that the product won't be added to the table at this time, pending NTEP obtaining additional information about the specific characteristics of the product.

2. Testing Meters Made of Different Materials

Source: California NTEP Laboratory – Carryover from 2007-2009 Measuring Sector Agendas

Purpose: For the past several years, the Sector has been discussing the issue of how to assess variations in meter materials in conjunction with type evaluation testing. A key point of contention in these discussions revolves around changes to meter materials from that used in the meter evaluated during type evaluation. The NTEP laboratories would like more definitive criteria to help them assess when changes to meter materials are metrologically significant to the extent that additional testing should be required in order for the new material to be covered on the NTEP CC. Meter manufacturers generally believe that changes in materials should be left to the judgment of the manufacturer, since they must ensure continued meter performance for their customers, and as the designers of the meter, they well understand and take into consideration product and environmental applications and adjust materials accordingly to meet the needs of the end application. The issue is further complicated by the lack of definitive criteria that would guide the NTEP laboratories in making a decision about which meter materials should be selected for testing to be representative of a range of materials.

Background: In 2006, the Sector considered the following proposal for adding a new section to the Technical Policy Section of Publication 14 to address meters made of different materials within the same family.

U. Meters Made of Different Materials within the Same Family

When multiple meters made of different materials within a meter family are submitted for evaluation all meters will be tested with at least one product from each product family to be included on the CC, and at least one meter will be tested with the range of products required in the Product Family Table for the meter type (e.g., positive displacement, turbine, mass meter, etc.) submitted for evaluation.

The Sector was unable to reach an agreement at its 2006 meeting and again reviewed this issue at its 2007, 2008, and 2009 meetings, but was again unable to reach a consensus on the item.

After discussing this issue at great length at its 2009 meeting, the Sector concluded that it would not reach a resolution on this issue by continuing to discuss it at the Sector meetings alone. Consequently, the Sector agreed to form a work group (WG), the "Metrologically Significant Characteristics of Technologies WG," to arrive at a uniform, appropriate, and clear approach for initial, subsequent, and additional tests for the performance of a device technology. The following people agreed to serve on the WG:

Metrologically Significant Characteristics of Technologies Work Group		
Organization	**Name**	
Actaris	Mr. Rodney Cooper	Chair
FMC	Mr. Rich Miller	Co-Chair
Emerson Process Management - Micro Motion Inc.	Mr. Marc Buttler	
Murray Equipment	Mr. Paul Glowacki	
Tuthill Transfer Systems	Mr. Mike Guidry	
Gilbarco	Mr. Gordon Johnson	
Liquid Controls	Mr. Dmitri Karimov	

The WG was tasked to:

(1) Create a short list of features/options affecting the metrological characteristics of each device technology by December 15, 2009;

(2) Prepare a 1 page analysis that briefly documents and provides the rationale for including each metrological characteristic in the list (referenced in task 1) by December 15, 2009;

(3) Review the first draft list of "significant constituents" and condense that list to only relevant characteristics; and

(4) Prepare a final list for a WG meeting during the NCWM Interim Meeting by January 15, 2010.

Discussion: At the 2010 Sector Meeting, Sector Chairman, Mr. Keilty, Endress and Hauser, asked for an update from any members of the WG on the progress of this work. Mr. Rodney Cooper, Tuthill Transfer Systems, noted that when he was asked to serve as Chairman of this WG, he worked for Actaris; he has since switched jobs and, with the need to focus on making this transition, he has been unable to devote time to this activity. While he would be willing to try to continue in the capacity of Chair and possibly prepare something by the next Sector meeting, he does not believe his current assignments would allow him adequate time to work on the project. He also noted that his Co-chair, Mr. Rich Miller, FMC, has indicated that he, too, is very busy.

Mr. Keilty noted that he had previously proposed that the Sector drop this item; however, the Sector indicated that the item is important. He asked for input on the idea of dropping the item from the Sector's agenda. Mr. Cooper indicated that, while he believes the issue is still an important one, he believes that the revised product families table may address many of the concerns.

Mr. Jerry Butler, North Carolina NTEP Laboratory, indicated that the key issue was that manufacturers were responsible enough to monitor the materials on the meters. He also noted that a 20 day permanence test really isn't adequate to assess the effect of a given material on meter performance in a given application. He suggested that, perhaps, a large part of the burden needs to be placed on the device purchaser to ensure that the meter purchased is suitable for the application. Mr. Dan Reiswig, CA NTEP Laboratory indicated that he had raised this issue noting inconsistencies with alloys and materials and the way in which they were listed on CCs. He suggested that the laboratories could continue to work with individual manufacturers and, if an alloy is to be referenced on a CC, then testing needs to be conducted with that alloy.

Sector Technical Advisor, Ms. Butcher, NIST WMD, commented that a key part of this issue was the question of what was and was not covered by a given CC; one manufacturer might test a particular material and list it on the CC, but if another manufacturer doesn't list the material, there was a question of whether or not that material was covered. Without additional guidance in the NTEP policy, laboratories have to rely on individual manufacturers to provide guidance on the "worst case" scenarios to select for testing. Manufacturers who aren't candid may be permitted to get by with doing less stringent testing, putting those manufacturers who are more forthright at a competitive disadvantage. NTEP Director, Mr. Truex, added that NTEP does not want to have to test with lots of

different materials; however, if an inspector calls and asks about a material that isn't listed on the CC, then he would have to indicate that the meter made with that material is not covered. Mr. Truex indicated that he has serious reservations on hearing that there are still unresolved concerns on this issue (including that the material of the meter sold for a given application makes a metrologically significant difference), but that manufacturers will take care of this themselves. While most manufacturers such as those present at the table will probably do this reliably, NTEP deals with many, many companies and some companies are not so responsible. He further commented that in discussing this issue, the Sector is asking manufacturers to identify the "worst case" scenarios, otherwise NTEP will have to do it for them.

Mr. Keilty observed that the Sector's discussion on this issue seems to have evolved from the original discussion of meter materials into one of metrologically significant characteristics that are of importance to specific meter technologies. Mr. Wade Mattar, Invensys/Foxboro, commented that there is a fundamental difference between the metrologically significant features for a particular technology. Others noted that for some technologies, certain materials and products are metrologically significant and for other technologies those same variables make no difference.

Ms. Butcher reiterated that the NTEP Laboratories want to do the fewest tests possible and give manufacturers the most coverage based on those tests. Without guidelines, each laboratory will interpret this differently. The laboratories are asking for guidance on what is and is not metrologically significant with respect to meter materials, to help ensure that they are making consistent decisions regarding what can or cannot be covered on a CC, and so that it is clear to the inspector in the field whether or not a given meter is covered by a CC.

Mr. Cooper questioned whether we will come back to the Sector meeting next year and once again argue about the issue without resolution if we head in the direction of defining metrologically significant criteria for materials. He indicated he does not see any benefit to doing this. Mr. Buttler, Emerson Process Management - Micro Motion Inc., questioned why we are singling out materials. He noted that there are many other aspects of design that could be considered metrologically significant. If it is likely that material will make a significant difference, then it may be worthwhile to purse development of this issue; if not, then it's not worthwhile to continue with this issue. Mr. Truex commented that, if there is data that the manufacturer can provide, that would prove to NTEP that a particular attribute is not metrologically significant, then he believes this would be acceptable.

After further discussion on this issue without any apparent resolution, Mr. Keilty proposed dropping the item from the Sector's agenda.

Decision: After extended discussion of this issue once again, the Sector appeared no closer to resolving the concerns regarding meter materials than it had in the past. Since no one could suggest or support any course of action that would enable the Sector to reach a resolution, the Sector agreed to drop this item from its agenda.

3. Add Testing Criteria to NTEP Policy U "Evaluating Electronic Indicators Submitted Separate from a Measuring Element"

Source: California NTEP Lab

Background: At its 2007 meeting, the Sector heard that Section U. of the NTEP Policy in Pub 14 allows for testing an indicator separate from a measuring element. However, specific test criteria had not been developed for this section. The Sector heard a recommendation to develop and add specific criteria for testing an indicator separate from a measuring element for this section. From 2007 to 2009, the CA NTEP laboratory worked to develop a checklist, but had received limited input on the drafts. At the 2009 Sector meeting, Mr. Reiswig, CA Division of Measurement Standards (DMS), provided an update to the Sector on progress to develop criteria for separate electronic indicators. He reported that the draft checklist provided to the Sector follows the general format of Pub 14, and the main test procedures are at the end of the document. Questions were raised about the readiness of the checklist for inclusion in NCWM Pub 14. The Sector agreed that some additional work is needed and suggested that a small WG be formed to further develop the checklist. One additional question to consider is whether or not the checklist would apply to indicators across all technologies and applications.

At the conclusion of its 2009 meeting, the Sector agreed to the following:

- A small WG comprised of the following individuals is to further review and discuss the checklist.

Electronic Indicators Checklist Development Work Group		
Organization	**Name**	
Actaris	Mr. Rodney Cooper	
Tuthill Transfer Systems	Mr. Maurice Forkert	
Liquid Controls	Mr. Dmitri Karimov	
FMC Technologies	Mr. Rich Miller	
Veeder-Root	Mr. Dave Rajala	
NIST WMD	Mr. Ralph Richter	
CA DMS	Mr. Dan Reiswig	Checklist Developer

- The WG will provide input to Mr. Reiswig at least one month prior to the March 2010 NTEP Laboratory Meeting. Mr. Reiswig will provide this input to the Measuring Laboratories. One additional question the WG will consider is whether or not the checklist would apply to indicators across all technologies and in all applications.

- Following the March 2010 NTEP Laboratory meeting, Mr. Reiswig will modify the draft checklist based on feedback from the NTEP Measuring Labs.

- Mr. Reiswig will provide a copy of the draft checklist to the NIST Technical Advisor by the end of August 2010 to allow for distribution to the Sector one month prior to the fall 2010 Sector Meeting.

- Following the fall 2010 Sector meeting, Mr. Reiswig will work with Sector Technical Advisor Ms. Butcher, NIST WMD, to update the draft checklist to reflect comments from the Sector.

- Assuming the checklist requires no further modification or review by the Sector, Ms. Butcher will submit the checklist to the NTEP Committee to consider for inclusion in the 2011 version of NCWM Pub 14.

Discussion: The Sector heard an update from Mr. Reiswig who indicated that he distributed the checklist with a request for comments; however, none were received other than from the other NTEP Laboratories. There were some members of the WG who indicated that they might discuss it at the January 2010 NCWM Interim Meeting, but he did not hear back from anyone regarding whether or not such a meeting took place. He has consulted with Measurement Canada and attempted to incorporate ideas from their procedures into the draft checklist. Mr. Reiswig believes the checklist still needs a lot of work before it is finalized. He noted that the key motivation for developing such a checklist is to help ensure that all of the NTEP Laboratories are conducting evaluations of indicators consistently. Thus, he felt that it is still important to pursue development of the checklist, but noted that he particularly needs help from industry.

NTEP Director, Mr. Truex, recognized the amount of work that Mr. Reiswig has put into the development of the draft and pointed out the importance of having industry review the checklist to determine if it is ready to be finalized.

Mr. Cooper, Tuthill Transfer Systems, who was the only other individual (besides Mr. Reiswig) from the original WG present, pointed out that when he initially agreed to participate on the WG he worked for Actaris, a company that made digital indicators, where he could have consulted with engineers responsible for designing indicators. Though Mr. Cooper would like to be able to help, he has changed companies and he doesn't feel he has the individual expertise needed to assist.

During discussions of this item on the first day of the Sector meeting, the Sector concluded that it would be helpful for Mr. Reiswig and the other NTEP Laboratory representatives to identify a list of specific areas where work is needed in order to finalize the checklist. This list would also assist the Sector in identifying people in the industry who would best be able to assist as subject matter experts in those areas.

On the second day of the Sector's meeting, Mr. Reiswig presented a list of five areas of the checklist that need specific attention and review. The Sector reviewed these items and added some additional comments.

Decision: The Sector agreed that Mr. Reiswig, CA Division of Measurement Standards (DMS), should continue developing the Checklist for Electronic Indicators Submitted Separate from a Measuring Element.

The Sector identified the following points that require further development and input from industry in order to finalize the checklist.

1. **It is recommended to run a minimum of 10,000 pulses when verifying pulses captured. Should we consider specifying a minimum number of pulses/division? For example, 100 pulses = 1 indication division or 10 pulses = 1 indication division.**

2. **Would a limit of "plus or minus 1 pulse in 10,000" be an appropriate tolerance?**

3. **Test with low, medium, and high temperature inputs to the indicator to verify a t emperature compensation function, if available. Test with a minimum of two API Gravity values through the temperature test ranges tested. Identify and specify reference tables.**

4. **Develop a test to verify multi point calibration using pulses.**
   Include frequencies for switchover of linearizations. For example, specify a certain number of pulses per liters.

5. **The tests listed above are based on an indicator receiving pulses from a measuring element. Therefore, it would seem logical to also develop tests for an indicator to verify other process signal output from other elements in the system that is sent to indicators such as frequencies at 4-20 milliamps, or other process signals.**

The Sector also identified the following people who might be able to provide additional input and asked that Mr. Reiswig also contact them to request their assistance.

Possible Industry Contacts to Assist in Review of Draft Electronic Indicators Checklist			
Organization	**Name**	**Organization**	**Name**
Contrec	Mr. Jef Gaskil	Itron	Mr. Mike McGhee
Dresser Wayne	Mr. Phil Katselnik	Kraus Global	Mr. Gord Wedel
Emerson (Daniel)	Mr. Andrew MacAllister	Liquid Controls	Mr. Dmitri Karimov
Emerson Process Management - Micro Motion Inc.,	Mr. Marc Buttler	Measurement Canada	Mr. Dennis Beattie
Endress and Hauser	Mr. Michael Keilty	Midwest Meter	Mr. Rick Salvesen
FMC	Mr. Rich Miller	Toptech	Mr. Jim Xander
Gilbarco	Mr. Gordon Johnson	VeederRoot	Mr. Kevin Jensen
Invensys	Mr. Wade Mattar		

The Sector agreed that Mr. Reiswig should forward the latest draft of the checklist along with the five areas requiring specific attention to the people listed in the original WG and to the list of possible contacts above. Mr. Reiswig should ask for their assistance in reviewing and commenting on the checklist, noting that input on the five areas would be of particular help.

4. Policy C - Product Family Table – Change in Upper Limit for Oxygenated Blends – Note 4

Source: Mr. Gordon Johnson, Gilbarco, Inc.

Background: At its 2009 meeting, the Sector was asked to review Pub 14, Technical Policy C. Product families for meters, Note 4 in the product families table, which currently states:

"Gasoline includes oxygenated fuel blends with up to 15% oxygenate"

The Sector was asked to consider changing the oxygenated fuel blends from 15 % to 25 %. The new Note 4 would read:

"Gasoline includes oxygenated fuel blends with up to 25% oxygenate"

At that time, Mr. Johnson, Gilbarco, Inc., advised the Sector that UL recently issued UL87A Edition 5, which details the tests and specifications needed to list dispensers for Ethanol and Ethanol blends. Mr. Johnson also outlined the history of this issue, noting that UL has made several significant changes to UL 87 (to include an alternative fuel standard) as a result of a push by EPA to coincide with a federal mandate to increase the levels of ethanol in vehicle fuel. He proposed changing the current reference in Pub 14 from 15 % standard to 25 %, noting that he has no data to illustrate the impact of the change. He indicated that both Gilbarco and Wayne are completing tests for E85, but no tests have been conducted for 25 %. He also noted that there was not enough ethanol in production and he anticipated a gradual increase in the amount of 25 % fuels. He expressed concerns that weights and measures officials will tag devices out of service if equipment is used to deliver product above 15 % without a corresponding increase on the application section of NTEP CCs.

At the 2009 Sector meeting, the NTEP Measuring Laboratories agreed additional data is needed to support increasing the limit. After discussing this issue at that meeting, the Sector was unable to reach agreement on the proposed change to policy C. The Sector expressed its appreciation to Mr. Johnson for information on changes to the fuel standard and agreed that this should remain an information item on the Sector's agenda. See the 2009 Measuring Sector summary for details.

Discussion: As agreed to at the last Sector meeting, this item was included on the agenda to allow Sector members to provide any updates they might have on this issue.

At its 2010 meeting, the Sector discussed the history of this item and the meaning of the clause in Note 4 of the Product Family table. Summarizing from last year's discussion, Technical Advisor, Ms. Butcher, NIST WMD, noted that the footnote does not preclude someone from submitting and testing for product with up to 25 % oxygenates; the footnote would simply not permit the higher (than 15 %) percentages to be covered without additional testing. When the Sector discussed this item last year, there was no available data on 25 % oxygenate blends, and that, because there was no UL approval on the units used to dispense the higher blends, it was not possible to conduct testing to demonstrate compliance. Several NTEP Lab representatives expressed the desire for additional data before extending the range to cover a larger percentage of oxygenate. Consequently, there was not support for making the proposed modification to Note 4 of the table.

Decision: The Sector did not support increasing the upper limit referenced in Note 4 of Policy C - Product Family Table from 15 % to 25 % and decided to drop the item from its agenda. The Sector notes that the submitter can resubmit the item; however, the NTEP Laboratories have advised that they would want to see data supporting the proposed change before they would consider expanding the upper limit. In the meantime, this decision does not preclude a company from submitting a meter for use with a higher percentage of oxygenate; it simply means that additional testing would be required in order to cover the higher percentage.

5. Electronic Linearization for Positive Displacement Meters

Source: Mr. Maurice Forkert, Tuthill Transfer Systems

Background: At its 2009 meeting, the Sector was asked to add criteria into Pub 14 for electronic linearization for positive displacement meters. Mr. Forkert suggested considering, if permissible, Measurement Canada's "Approval Procedure for Linearization Functions Incorporated in Measuring Systems" (Document Number VO-AP-037) as the basis for the criteria. Mr. Forkert noted that there apparently is no regulation for electronic linearization internal to a positive displacement meter. He also suggested some additional revisions to the Measurement Canada document (see 2009 Sector Summary for details).

In discussing this issue, reference was made to Pub 14 Policy G. Range of Data Points, which addresses the use of "multi-point calibration." This policy specifies that "multi-point calibration" must be "blind and integral" which, according to the policy, is intended to mean it is programmed during the manufacture of the device and is not accessible in the field. The policy also prohibits multi-point calibration from being used as a means to establish the minimum turn down ratios of 5:1 or 10:1; however, it does allow the feature to be used to extend the measuring range beyond the minimum ratios. In discussing how this policy is to be applied in conjunction with Mr. Forkert's example, there were questions regarding the use of the term "blind and integral." Several members noted that a better definition of the term is needed in order to ensure consistent understanding of the term and its use in the application of requirements.

Mr. Forkert explained that his company had introduced a meter into the market with a linearization board and was advised by the weights and measures authority that there were no regulations to address that component. He recommended including the feature as allowable in the register, and to not require a separate evaluation of this component. He explained that the part could not be removed or modified without breaking a seal. He also requested that the e-linearization feature be considered as part of the meter just as the pulse output component is looked at as part of the meter.

Mr. Oppermann, Weights and Measures Consulting, commented that industry wants to be able to use e-linearization as a means to improve the performance of a meter and noted that this has been done for years with scales and load cells. Provided the performance is within acceptable levels, it should not matter how this is accomplished.

Mr. Forkert noted a distinction in his scenario is that they want the e-linearization feature to be considered a part of the meter, much as one would consider other components of the device. Understanding that the e-linearization feature is used to individually program each meter at the factory, some NTEP laboratory representatives expressed concerns about the possibility of interchanging parts in the field and the impact on meter performance, and questioned what means would be provided to deter field replacements. Some manufacturers noted that this should be viewed no differently than replacing other metrologically significant parts in the field; for example, meters are not shipped back to the factory for replacement of a rotor and replacement of the e-linearization board should be viewed in the same light. It is up to the user/installer to ensure continued compliance with accuracy and other requirements.

There were also questions during the discussion regarding whether or not the e-linearization feature should be listed as a feature on the CC. Some pointed out that other device types use metrologically significant components that can be replaced in the field when problems are encountered. Repairs, adjustments, or changes to these features are generally obvious or detectable. Mr. Steve Patoray, Consultants on Certification, gave several examples of weighing device applications such as load cells (which are not repairable in the field), junction boxes (which can be protected by a security seal), and electronic boards (which are completely replaced when they fail).

The Sector discussed developing language to clarify the application of Policy G., but was unable to reach a conclusion at the meeting. While they did not identify a specific alternative, there was general agreement that the electronic linearization that is programmed during the manufacture of a device should not be readily accessible in the field without breaking an approved seal. The NTEP Labs expressed concern regarding the unique nature of the programming and how interchange of the e-linearization board would be controlled in the field to prevent the

facilitation of fraud. The Sector agreed that this issue requires additional work that would best be accomplished by a small WG.

At its 2009 meeting, the Sector agreed that a small WG comprised of the following individuals be established to further develop this issue for the Sector's review.

Developing Electronic Linearization Criteria Work Group		
Organization	**Name**	
Consultants on Certification	Mr. Steve Patoray	Work Group Chairman
Tuthill Transfer Systems	Mr. Maurice Forkert	
Maryland NTEP Laboratory	Mr. Mike Frailer	
Tuthill Transfer Systems	Mr. Mike Guidry	
Liquid Controls Corporation	Mr. Dmitri Karimov	
FMC	Mr. Rich Miller	
Meggitt/Whittaker Controls	Mr. Ken Smith	

The WG was tasked with the following:

1) Clarify Policy G. Range of Data Points by bouncing ideas off of Mr. Mike Frailer for:
   a. Defining what is meant by multi-point calibration shall be "blind and integral" to the measuring element.
   b. Clarifying what is meant by multi-point calibration shall be not "accessible" in the field.

2) Develop language in Policy G. Range of Data Points to allow for uniform interpretation and application of the criteria by the United States and Canadian stakeholders by February 2010, including:
   a. Where necessary to clarify the intent of the criteria:
      i. Modify language
      ii. Define terminology

3) Review and Discuss Modifications to Policy G. at the March 2010 NTEP Measuring Lab Meeting

Discussion: The Sector asked for an update of the WG's progress.

Mr. Frailer, Maryland NTEP Laboratory, indicated that he has had no contact from any members of the WG on this issue.

Mr. Cooper, Tuthill Transfer Systems, reported that he visited with Mr. Maurice Forkert, Tuthill Transfer Systems, on this issue. He noted that they are attempting to clarify that it is necessary to break a seal to access meter adjustments, and he proposed the following alternative language for the Sector to consider:

> "Multi-point calibrations shall be blind and integral (programmed during manufacture and not accessible in the field without breaking a physical seal)."

Mr. Butler, North Carolina, NTEP Laboratory, questioned whether the term "blind and integral" is referring to something that is part of the meter that cannot be replaced or if it is referring to something else. Other Sector members asked for clarification on various aspects of how Tuthill's meter works.

Mr. Cooper clarified that, in Tuthill's instance, the meter does all calculations within the meter; it does not rely on a separate device such as a controller for those adjustments. He noted that their meter has a programmable chip that is inside of the mother board of the device. The programmable chip is accessible by removing a cover and several screws. By using the program in the chip, it is possible to get a very flat curve, thus, taking a really good meter and making it even more accurate. Their product uses the same mother board for all meters across the product lines. The small, programmable chip has different pulses per gallon for different meters. If the mother board on a given meter were damaged, they would send a new mother board with a new chip with the exact same profile as the

original one for that individual meter. The mother board has all of the electronics in the meter; no matter which indicator is used with the meter, it will always provide the same output.

Technical Advisor, Ms. Butcher, NIST WMD, asked for clarification that the meter cannot be adjusted at multiple points along its calibration curve in the field. You can break a seal and change the chip; you can replace the chip with a chip with another profile, but you can't selectively calibrate the meter at different points. This is unlike a meter that is interfaced with an indicator in which you can adjust the meter factor at different flow rates along its curve. Mr. Cooper indicated that this is correct.

Mr. Reiswig, California NTEP Laboratory, expressed concern over the possibility of being able to interchange a reprogrammed mother board in the field. The Sector discussed at length how the term "blind and integral" is being used in Tuthill's scenario as well as in other instances and also discussed whether or not these various approaches would facilitate fraud. The Sector also discussed the importance of a meter being able to meet the basic 5:1 (or 10:1 in the case of a mass flow meter) turndown ratio without being calibrated at multiple points. The Sector also discussed whether or not there is justification for prohibiting multiple point calibration from being used to meet the minimum turn down ratio; however, there was not a clear consensus on this point. Some members also cited concerns about various types of adjustments being used to compensate for worn or poorly designed meters.

Mr. Beattie, Measurement Canada, commented that it appears we are giving two different features the same name. He associates the term "multipoint calibration" with something that is accessible in a register and that can be programmed in the field. He suggested that the Sector consider using the following International Organization of Legal Metrology (OIML) definition for "correction device:"

> OIML Definition for Correction Device:
>
> > "Device connected to or incorporated in the meter for automatically correcting the measured quantity at the time of measurement, by taking into account the flowrate and/or the characteristics of the liquid to be measured (viscosity, temperature, pressure, etc.) and the pre-established calibration curves.
> >
> > The characteristics of the liquid shall either be measured using associated measuring devices, or stored in the memory of the instrument."

Mr. Cooper commented that OIML refers to the meter as a complete system. He suggested that the OIML terminology might make this issue overly complex and that we should strive to keep this issue simple. Mr. Cooper also noted that the multi-point calibration is not a correction device in this instance. If you can program this inside the meter and, after it leaves the factory you can't change it, then it is "blind and integral to the meter." We want to simply say that you can't change it after it leaves the factory.

Following discussions on this issue the first day of the meeting, Mr. Cooper drafted alternative language for the Sector to consider. After further discussions on the issue, the Sector finally agreed on recommended changes to Policy G.

Decision: The Sector agreed to recommend that the second paragraph of Technical Policy G be replaced with the following:

> **A measuring element may use factory-established linearization curves to establish the minimum flow range (5:1, 10:1, or as required), providing the linearization programming is installed during manufacturing and the programming cannot be altered after leaving the manufacturer.**
>
> **Auxiliary equipment (e.g., indicator or register) with programmable multi-point calibration that alters the output signal from the measuring element to extend the flow range of the system beyond the measuring element's required minimum flow range may be used and the auxiliary device's multi-point calibration will be noted on the CC and must be marked on the meter.**

New Items:

6. Code Reference S.1.6.1. Indication of Delivery – Reference to Indicator Reset

Source: Mr. Dmitri Karimov, Liquid Controls

Background: The Sector was asked to consider modifying Pub 14 LMD Checklist Code Reference S.1.6.1. Indication of Delivery (see page LMD-29) by adding a "Note" to Step 5, as follows:

> **Code Reference: S.1.6.1. Indication of Delivery**
> 7.25. Retail devices shall automatically show their initial zero condition and amount delivered up to the nominal capacity of the device. For electronic devices manufactured on or after January 1, 2006….to ensure delivery starts at zero.
>
> 7.26 For electronic devices manufactured prior to January 1, 2006….need not be indicated.
>
> **Test Method Steps:**
> Step 1: Set unit price on dispenser.
> Step 5: Activate the dispenser and let the system reset to 8s, blanks then 0s.
>
> **Note: Display segment check instead of "8s and blanks" is allowed.**

Putting aside the fact that there is no code reference that specifies an indicator must initially displays "8's and blanks," this requirement might be applicable only to the old-style cathode tube-based displays. This requirement is not applicable to LED displays, which perform a segment check of the display.

In addition to the above reference to the NTEP LMD checklist, the submitter provided the following reference to OIML R 117-1, Page 55:

From R 117-1 (page 55)

a) For fuel dispenser

- displaying all the elements ("eights" test if appropriate); and
- blanking all the elements ("blank" test), and displaying "zeros" for quantity, and, if applicable, displaying the valid unit price and "zeros" for price, just before a new delivery starts. Each step of the sequence shall last at least 0.5 second.

b) For all other interruptible and non-interruptible measuring systems, the test sequence shall be as described under (a) (above) or any other automatic test cycle which indicates all possible states for each element of the display.

Discussion: Mr. Beattie, Measurement Canada, asked whether or not there is a specific reference to the reset display in NIST Handbook 44 (HB 44). Sector Technical Advisor, Ms. Butcher, NIST WMD, noted that there is not a specific reference in the Liquid-Measuring Devices code; however, there are General Code requirements specifying that a device must be in proper operating condition. Additionally, she noted that this checklist item is addressing a return to zero, not the segments. It might be appropriate to have something specific to address unlit segments. Sector Chairman, Mr. Keilty, Endress and Hauser, and NTEP Director, Mr. Truex, also cited references in the General Code, paragraphs G-S.5.1. Indicating and Recording Elements, General and G-S.6. Marking Operational Controls and Features that could be used to address malfunctioning displays.

The NTEP Measuring Labs reported meeting prior to the Sector meeting and suggested a proposed alternative (outlined in the Decision below) to address the issue. The Sector reviewed the proposed alternative and agreed that it appears to address the concern raised by the submitter.

Decision: The Sector agreed to recommend modifying Step 5 as follows to recognize other methods for resetting the indications:

Step 5: ~~Activate the dispenser and let the system reset to 8s, blanks then 0s.~~ Activate the dispenser and let the system reset to zero (for example, showing "8's" and then zero; running through a segment check, or using another method of resetting the system).

7. Development of Water Meters Checklist

Source: Mr. Andre Noel, Neptune Technology Group, Inc.

Background: Utility type water meter manufacturers are receiving state requests for a NTEP Certificate of Approval. Utility type water meters under HB 44, Section 3.36. are evaluated under the California Type Evaluation Program (CTEP). Currently there is no NTEP for utility type water meters. The Sector was asked to consider adding a checklist for utility type water meters to Pub 14. Mr. Andre Noel, Neptune Technology Group, distributed (via e-mail) a draft checklist to the Sector Chairman, NTEP Director, and Technical Advisor the night before the Sector meeting; he also offered copies to those interested at the Sector meeting.

Discussion: At the Sector meeting, Mr. Noel provided an overview of this item. He noted that he and representatives from other water meter manufacturers have been working quite a bit with CA DMS, which does most of the testing of water meters in the United States for those water meters regulated by weights and measures jurisdictions. Presently Certificates are issued under the California Type Evaluation Program, and, if a checklist and test procedures were developed for inclusion in Pub 14, then the scope of water meter testing could be expanded to include NTEP testing. Mr. Noel proposed establishing a small WG to work on the development of a checklist and present it to the Sector for consideration.

The Sector was amenable to establishing a WG to work on the development of a checklist. Mr. Beattie, Measurement Canada, asked that Mr. Jim Welsh, Measurement Canada, be included in any mailings and correspondence since MC is currently working on its water meter criteria (Mr. Beattie confirmed this with Mr. Truex via e-mail during the Sector meeting). Sector Technical Advisor, Ms. Butcher, NIST WMD, asked that Mr. Ralph Richter, NIST WMD, be copied on any WG correspondence since he is the U.S. technical point of contact for OIML R49 (Water Meters). NTEP Director, Mr. Truex, noted that this draft should be circulated to as many people in the community as possible.

Mr. Reiswig, California DMS, advised the Sector that he put together a draft checklist a few years ago, and circulated the document. He noted that, in the draft presented to the Sector, Mr. Noel has made some changes to the original document, and for some of the changes, California DMS is not in agreement with the proposed changes. For example, with regard to the number of meters to be tested, California tests three meters of the same model. This is a bit different from what NTEP does in testing other meter types; however, the testing process is different for water meters in that three meters can be tested at one time on a water meter test bench. Additionally, conducting only nine tests on a water meter still provides an extremely limited data set for a meter that is used so widely in apartment buildings. An additional area of discussion is the flow rates at which the meters are to be tested. Mr. Reiswig noted that California DMS is in closer agreement to the proposed procedures now than previously, and anticipates continued work will allow these differences to be resolved. Mr. Reiswig noted that his comments are reflected using track changes in the document that Mr. Noel has submitted.

Mr. Keilty, Endress and Hauser, questioned the inclusion of criteria for remote communication in the draft checklist and asked whether event counters would be required. Mr. Reiswig explained that the criteria were included because California anticipates seeing this type of feature on meters in the future. Ms. Juana Williams, NIST WMD, also suggested that the HB 44 Water Meters Code be examined with regard to any proposed audit trail criteria to be sure that the proposed criteria is supported by the code; if not supported, a proposed change to the code might need to be considered. Likewise, the WG might be alert to other proposed changes to the code which would update the code to reflect current technology. Ms. Butcher, suggested that as the group reviews the code and develops the checklist, that it examine American Water Works Association standards and consider proposed changes to the code and/or

checklist. Manufacturers have criticized the HB 44 Code for divergence from AWWA standards, and this might be an opportune time to propose changes to either HB 44 or to AWWA to harmonize standards where appropriate. In some instances differences may make sense since the focus of HB 44 and AWWA are somewhat different; however, if there are areas where the standards can be better aligned, we should consider taking steps to do so. Additionally, it would be helpful to make the NCWM Specifications and Tolerances (S&T) Committee aware of needed changes to HB 44.

Mr. Keilty asked whether or not the draft checklist might be ready for circulation to the Sector by the 2011 NCWM Interim Meeting, with the ultimate goal of readying the checklist over the next year for publishing in the 2012 edition of NCWM Pub 14. Mr. Noel and Mr. Reiswig indicated that this could be accomplished.

Decision: The Sector agreed to establish a WG to further develop the draft checklist presented to the Sector at its October 2010 meeting. The WG consists of:

Water Meters Checklist Development Work Group	
Member	**Company/Organization**
Mr. Andre Noel	Neptune Technology Group
Mr. Dan Reiswig	California Division of Measurement Standards
Mr. Jim Welsh	Measurement Canada (MC) (pending confirmation by Mr. Dennis Beattie)

Mr. Noel will forward the draft checklist to other companies such as those who hold CA type approval certificates to ensure that it gets wide distribution. Mr. Beattie, MC, will contact Mr. Welsh, MC, and confirm that it is acceptable for Mr. Noel to forward the document to Mr. Welsh for input from MC.

In developing the checklist, the group is asked to:

(1) Identify areas in HB 44 Section 3.36. Water Meters Code where changes might be appropriate to update the criteria to reflect current technology and practices. For example, more specific audit trail criteria may need to be added to the Water Meters Code.

(2) Forward any proposed changes to HB 44 to the NCWM S&T Committee via the established NCWM process by preparing and submitting NCWM Form 15 to the regional weights and measures associations and NTETC Measuring Sector.

(3) Consider any differences between AWWA standards and NIST HB 44 and consider recommendations for aligning the two documents where that makes sense.

(4) Copy the Measuring Sector Chairman, Mr. Keilty and Technical Advisor, Ms. Butcher on communications to the group.

(5) Copy Mr. Richter, NIST WMD, who is the U.S. point of contact for OIML R49 with any proposed drafts.

(6) Distribute a subsequent draft for review by the Sector by the January 2011 NCWM Interim Meeting.

(7) Distribute a final draft for review by the Sector at least a month prior to the fall 2011 Sector meeting.

This item will be maintained as a Carryover Item on the Sector's agenda.

8. Development of Hydrogen Gas-Measuring Devices Checklist

Source: NIST Weights & Measures Division

Background: At the July 2010 NCWM Annual Meeting, NCWM members voted to add a tentative code for commercial hydrogen gas-measuring devices to HB 44. Since the majority of states require NTEP CCs for commercial weighing and measuring devices, offering NTEP CCs for these devices would facilitate the acceptance of these devices in the commercial marketplace and assist states in their assessment of these devices.

The Sector was asked to discuss and consider the following:

(1) Propose that the NTEP Committee consider expanding the scope of NTEP evaluations to include hydrogen gas-measuring devices.

(2) In anticipation that the NTEP Committee will support this proposal, establish a small work group tasked with the development of a checklist for hydrogen gas-measuring devices.

Discussion: NTEP Director Mr. Truex noted the importance of developing a checklist for hydrogen gas-measuring devices in a timely manner. Now that a tentative code has been adopted, manufacturers of this equipment will begin seeking type evaluation on these devices. Particularly since this equipment is already in use, Mr. Truex commented that we are already behind in the development of a checklist. He cited a similar situation with Multiple Dimension Measuring Devices and noted the importance of involving all parties affected by the code, including manufacturers, users, regulatory officials, and NTEP laboratories. Mr. Truex also noted that, since alternative fuels are highly visible, some jurisdictions may get political pressure to accept devices in advance of finalizing the HB 44 code and NTEP checklists. Mr. Truex also cited the paragraph included in the application section of the tentative code which states that NTEP will only accept for type evaluation those devices which comply with the provisions of the code.

Sector Chairman, Mr. Keilty, Endress and Hauser, suggested establishing a small WG of Sector members to develop a draft for consideration by the Sector. Technical Advisor, Ms. Butcher, NIST WMD, recommended including Sector members who have served on the U.S. National Work Group (USNWG) for hydrogen, since they would be familiar with the criteria included in the draft code and represent many of the interest groups noted by Mr. Truex. Sector members present were amenable to the idea of establishing a WG to work on a draft checklist.

Several members noted that California DMS had developed a draft checklist in 2008 and NIST WMD provided comments on the checklist; however, the work had been set aside pending further development of the HB 44 code. Now that the code has been adopted as a tentative code, this checklist could be resurrected and updated to reflect the provisions of the tentative code. Ms. Butcher noted that the USNWG is continuing to work on developing recommended test procedures for hydrogen gas-measuring devices; she suggested that work could move ahead in developing the portions of the checklist other than the test procedures section, including updating the draft developed by California DMS to the current tentative code requirements; once the USNWG has completed its work on recommended test procedures, the WG would have information that could be used as the basis for developing more detailed type evaluation test procedures. Ms. Williams, NIST WMD and Technical Advisor to the USNWG on Hydrogen Measuring Devices, advised the Sector that last year Ms. Diane Lee, NIST WMD, developed and circulated a draft EPO and associated Excel spreadsheet for use in testing hydrogen-gas measuring devices; while the draft is not final, this information might also be of use to the WG. She also noted that the USNWG members provide links to the broader hydrogen measurement community, and many, including herself, are involved in international standards development such as OIML R139 (which addresses compressed gas motor fuels) and OIML R81 (which addresses liquid hydrogen). Ms. Butcher commented the test procedure developed by NIST WMD is based on other NIST examination procedure outlines (EPOs) for gravimetric testing, and NIST has questions about the uncertainties associated with gravimetric testing for these devices given the relatively small net quantities involved and the availability of appropriate equipment in field environments. Consequently, the USNWG is actively exploring other alternatives to find the best solution for field testing. Mr. Reiswig, California DMS, noted that California DMS has contracted with the California Energy Commission for the development of field test equipment and procedures and, while there have been delays as a result of the contracting process, he anticipates this work will provide input for the WG to use.

Decision: The Sector established a small WG to develop a d raft Pub 14 Hydrogen Measuring Devices Checklist for the Sector to consider at its next meeting. The WG consists of the following:

Work Group on Hydrogen Gas-Measuring Devices NTEP Checklist	
Member	**Company/Organization**
Mr. Michael Keilty (Work Group Chair)	Endress and Hauser
Mr. Dennis Beattie	Measurement Canada (to link to expert MC's compressed gases area)
Mr. Marc Buttler	Emerson Process Management - Micro Motion Inc.
Mr. Mike Gallo	CLEANFUEL USA
Mr. Dan Reiswig	California Division of Measurement Standards
Ms. Juana Williams	National Institute of Standards and Technology

The WG will begin by reviewing a draft checklist prepared in 2008 by Mr. Norman Ingram, California Division of Measurement Standards. Ms. Williams will contact Mr. Ingram to ask that he send a copy of the checklist to the members of this WG to ensure that everyone is working on the same version of the checklist. The WG will:

(1) Update the checklist to correspond to the 2010 version of the Hydrogen Gas-Measuring Devices Code (adopted by the NCWM in July 2010);

(2) Review the checklist and provide comments to Sub Group Chairman, Mr. Keilty;

(3) Schedule web conference call(s) to discuss needed changes; and

(4) Finalize the draft and present it to the Sector for consideration at its next meeting.

The Sector also acknowledged that the USNWG on hydrogen is presently exploring multiple options for performance tests of hydrogen measuring instruments. Once the USNWG makes its final recommendations for field test procedures for these devices, the WG will proceed to work on the development of test procedures for type evaluation. Ms. Williams will also update the USNWG on the Sector's efforts so that they are aware of the work.

9. Next Meeting

The Sector was asked to develop a proposed date and location for the next meeting. The Sector discussed whether to recommend that the meeting continue to be held in conjunction with the Southern Weights and Measures Association (SWMA) meeting or to recommend that it be held with another regional association or as a separate meeting. The Sector discussed some alternate ideas; however, there were no strong feelings to either maintain the current arrangements or to consider an alternative.

Recommendation: The Sector agreed to recommend that its next meeting be held in conjunction with the SWMA once again. However, because the Sector must be mindful of meeting publication deadlines for the NCWM Interim Meeting Agenda, the Sector noted that this decision may need to be revisited once a date and location has been selected for the next SWMA meeting.

Additional Items as Time Allows:

The Measuring Sector was asked to provide input to the NCWM S&T Committee on the following measuring related issues on its agenda if time permitted during the Sector Meeting. In the interest of brevity, the narrative for

each item is abbreviated to the extent practical. Full descriptions of the items can be found in the S&T Committee's list of carryover items and its 2009 Interim and Final Reports.

10. General Code, Section 1.10, Paragraph G-S.1. Marking (Software) (S&T Carryover Agenda Item)

Sources: 2009 and 2010 NTETC Software Sector Agenda Items and 2010 S&T Item 310-3 G-S.1. Identification. (Software)

See also:

2010 Software Sector summary:
(http://ncwm.net/sites/default/files/meetings/software/2010/10_Software_Summary.pdf)

2010 Interim Report of the S&T Committee:
(http://ts.nist.gov/WeightsAndMeasures/Publications/10-Pub16.cfm)

Background: Weights and Measures inspectors need a means to determine whether equipment discovered in the field has been evaluated by NTEP. If so, the inspector needs to know at a minimum the CC number. From this starting point, other required information can be ascertained. Currently HB 44 Paragraph G-S.1. includes three options for marking of the CC:

1. Permanent marking;

2. Continuous display; or

3. Recall using a special operation.

Manufacturers of Purpose-built (known internationally as "Type P") equipment often choose permanent marking. For Type Approved software executing on a Universal computer (internationally known as "Type U"), permanent making is not very practical. The second option of continuous display is also undesirable as the permanent display because it occupies valuable operator/customer screen area. As a result most makers of software for Type U equipment opt for the special recall option. Unfortunately, Paragraph G-S.1. is somewhat vague about the specific means of recall. According to the Software Sector, software makers can be quite creative, leaving the field inspector guesswork, frustration, and wasted time. If the inspector complains about how difficult it is to locate required information, the maker notes that the recall procedure is documented in the CC. But this is precisely the information that cannot be retrieved in the field, leading to a circular argument.

Compounding the problem, makers of sophisticated built-for-purpose equipment would also like the same flexibility currently afforded to makers of software for Type U equipment. The recall method is not available to the Type P maker today.

In response to comments heard during the 2010 NCWM Interim meeting, the Software Sector (at its March 2010 meeting) proposed changes to the language shown in the NCWM S&T Committee's 2010 Interim Report Item 310-3. These revisions removed the differentiation between types of software (Type P and Type U) while still managing to achieve the Sector's objective of simplifying the process of locating required marking information. That revised proposal can be seen in the 2010 Software Sector Summary and is not included here for the sake of brevity.

In summary, for S&T Item 310-3 the Software Sector now suggests amending the current item under the S&T Committee's consideration. The Software Sector also initiated discussion on two new concepts, which may eventually result in additional recommendations to amend G-S.1. It should be noted that these new ideas are in the developmental stage, and are included here by request of the Software Sector, since its members would appreciate comments from the regions and other interested parties.

First, the Software Sector sees merit to requiring some connection between the software identifier (i.e., version/revision) and the software itself. The proposal was as follows (with the expectation that examples of acceptable means of implementing such a link would be included in Pub 14).

Add a new sub-subparagraph *(3)* to G-S.1.*(d)* to read as follows:

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

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

The Software Sector would like feedback on the proposal to specify a limited number of menu items/icons for accessing the CC number (it is not hard-marked or continuously displayed) in proposed G-S.1.1. subparagraph (b) as follows:

(b) The CC Number shall be:

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

(i) <u>For menu-based systems, "Metrology", "System Identification", or "Help".</u>

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

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

<u>A Possible Compromise Solution:</u>

The Software Sector is asking if the restrictions for marking Type P equipment (which allow the same options as for Type U) be relaxed in exchange for limiting the number of optional means for recalling the CC number when a recall sequence is required.

The proposed limitations on CC recall sequence are:

1. Recall shall not require more than two levels of operations. The CC recall method (trigger, command, etc.) may be present either on the main screen or one sub-menu/sub-screen down.

2. A limited number of menu text strings or icon shape choices are permitted for both the CC recall methods and the optional top level. (There is actually some validity to the argument that this requirement is currently already implied by the term 'readily identifiable menu' currently used in HB 44 paragraph G-S.1. to describe the allowable means of recalling the CC.)

Of course, to affect this compromise, a finite list of acceptable menu text/button icon options will have to be agreed upon and documented. Note that the states didn't express much concern about the actual number of allowable selections included (although they agreed it should be reasonable); they are more concerned that there is simply a

finite list of options which the NTEP labs can reference to validate the device's implementation and that using that same list inspectors can locate the required information in the field.

Thus, the Software Sector developed the following brief initial list of ideas of allowable/acceptable menu text and icons as a starting point for developing the complete list of acceptable options for the readily identifiable menu. Comments and additional suggestions for entries in the list are welcome.

Permitted Menu Text examples	***Permitted Icon shape examples***	***Essential characteristics***
Information Info		Top level menu text or icon • Icon text is a lower case "i" with block serifs • Text color may be light or dark but must contrast with the background color • Icon may have a circular border • Activation of this menu text/icon may invoke a second level menu text/icon that recalls metrology information.
Help **?**		Top level menu text or icon • Icon text is a question mark • Text color may be light or dark but must contrast with the background color • Icon may have a circular border • Activation of this menu text/icon may invoke a second level menu text/icon that recalls metrology information.
Metrology Metrological Information		Top or second level menu text or icon • Icon text is an upper case "M" • Text color may be light or dark but must contrast with the background color • Icon may have a rectangle or rounded rectangle border • If present, the activation of this menu text/icon must recall at a minimum the NTEP CC number. Other metrology information may optionally be displayed.
SI S.I.		Top or second level menu text or icon • Icon text is upper case "SI" • Text color may be light or dark but must contrast with the background color • Icon may have a rectangle or rounded rectangle border • If present, the activation of this menu item/icon must recall at a minimum the NTEP CC number. Other metrology information may optionally be displayed.
NTEP Data N.T.E.P. Certificate		This one is debatable – what if the certificate is revoked? Does NTEP grant holders of CCs the right to display the logo on the device, or just in documentation?

Acceptable examples of where the text or icon may be displayed:

1. The "M" icon is available on the home screen. Activation of the icon displays a new screen containing the CC number and some additional metrology information including the software version/revision number(s).

2. The "SI" icon is available on the home screen. Touch screen activation of the icon displays a pop-up containing the CC number. Releasing the icon erases the pop-up.

3. The main screen contains the "i" icon (information). Activating this icon displays a screen of other icons including the "M" icon. Activating the "M" icon displays the NTEP CC.

4. The main menu includes a "Help" selection which in turn contains a "Metrology" selection. Activation of the Metrology selection displays a pop-up screen containing all global metrological approvals, including the NTEP CC number. The user manually dismisses the pop-up screen by pressing the [X] button.

5. The main menu includes an "Info" selection which in turn contains a "SI" selection. Activation of the SI selection displays a pop-up screen containing all global metrological approvals, including the NTEP CC number. The user manually dismisses the pop-up screen by pressing the [OK] button.

Recommendation to the Measuring Sector: This item was included on the Measuring Sector's agenda as an information item to keep Sector members informed of the progress of this NCWM S&T Issue and to ask for input from Sector members on this issue.

The S&T Committee has been considering changes to G-S.1. to better address identification requirements for metrologically significant software in software-based systems. The Committee has considered multiple proposals under this item from the NTETC Software Sector and the weights and measures community. At the July 2010 NCWM Annual Meeting, the S&T Committee agreed to maintain this as an Information item on its agenda to allow for additional review and input. As noted above, the Software Sector is looking for specific feedback on proposed modifications to paragraph G-S.1. so that it can develop a revised proposal for consideration by the S&T Committee. Should time permit the Measuring Sector to discuss this item, the NCWM S&T Committee and the Software Sector would appreciate the Sector's input.

Discussion: NTEP Director and past Software Sector Chairman, Mr. Truex, provided a history of how this issue evolved. He noted that there were multiple attempts to address software in not-built-for purpose devices. The Software Sector has attempted to further simplify the identification requirements that apply to software-based systems and has made multiple suggestions that were not accepted. The Sector has taken a step back and is trying to get the point across that the marking requirements are not for the manufacturer, but to assist the inspector in the inspection process and in assessing whether or not a specific device, including software, is covered under an NTEP CC. The Sector realizes that this information is not going to be physically marked on the device, and is looking for alternatives in which this information can be provided electronically to inspectors in an easily accessible manner. It will likely be provided on the device's display screen and there is limited space for this information to be displayed. The SW Sector is looking for input on the general direction it should take in developing/updating HB 44 requirements. If the direction seems reasonable, the SW Sector will further develop the idea; if not, the Sector will consider an alternative direction.

The Sector discussed some of the symbols in the proposed list of icons and discussed differences between built-for-purpose and not-built-for-purpose devices. Some Sector members also acknowledged that sometimes changes to software will affect the metrological functions of the device, even though the change was not intended to have that effect, and was supposed to be a "non-metrologically significant" change. Some members, particularly the regulators, supported the idea of a "Weights and Measures" key that would be standardized and, thus, readily recognized by the field official. Mr. Truex acknowledged that the regulatory community has, in his opinion, indicated that the options need to be limited. Mr. Rich Tucker, RL Tucker Consulting LLC, and Mr. Keilty, Endress Hauser, Flowtec AG USA, expressed support for labeling the key that would enable display of the required information as "help."

Decision: The Sector had no additional technical guidance to offer to the S&T Committee on this issue. However, based on comments from Sector members present, the Sector expressed general support for trying to refine the marking requirements and limit the number of options for marking keys that enable the inspector to view the required marking information.

11. G-S.8.1. Provision for Sealing Electronic Adjustable Components, G-S.8.1. Adjustment Mode Indication, and Definitions for "Adjustment" and "Adjustment Mode" (HB 44 Section 1.10. General Code) *(S&T Agenda Carryover Item)*

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

Background: For several years, the NCWM S&T Committee has been considering proposed modifications to General Code paragraph G-S.8. that would help to ensure that the paragraph is being consistently interpreted during type evaluation and by the weights and measures community in field applications.

The Committee has heard opposition to making changes to G-S.8. from SMA and the NTETC Weighing Sector. NIST WMD suggested that the Committee consider withdrawing the item and proposing changes to align the NTETC weighing devices checklist with the measuring devices checklists.

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

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

The NCWM S&T Committee is looking to the Weighing Sector to develop type evaluation criteria consistent with the philosophy stated in the Publication 14 LMD checklist. Thus, no action was asked of the Measuring Sector. This item was included on the Measuring Sector's agenda as an information item to keep Sector members informed of the progress of this NCWM S&T issue and to acknowledge that the criteria in the LMD checklist is consistent with the intent of G-S.8.

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

Discussion: Sector Chairman, Mr. Keilty, and Sector Technical Advisor and NCWM S&T Committee Technical Advisor, Ms. Butcher, gave an overview of this item and noted that no action was required on the part of the Sector unless the Sector had comments it wishes to share with the S&T Committee.

Decision: The Sector had no additional technical guidance to offer to the S&T Committee on this issue.

12. G-A.6. Nonretroactive Requirements (Remanufactured Equipment) (HB 44 Section 1.10. General Code) *(S&T Agenda Carryover Item)*

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

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

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

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

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

(b) both new**, ~~and~~** used**, and remanufactured** devices brought into a state after the effective date; and

(c) devices used in noncommercial applications which are placed into commercial use after the effective date.

Nonretroactive requirements are not enforceable with respect to devices that are in commercial service in the state as of the effective date or to new equipment in the stock of a manufacturer or a dealer in the state as of the effective date.
[*Nonretroactive requirements are printed in italic type.]*
(Amended 1989 **and 201X**)

Background: NIST WMD received an inquiry from a state Weights and Measures Director regarding whether a nonretroactive paragraph in the LMD Code of HB 44 would apply to a remanufactured device. In researching this inquiry, WMD discovered an unintended gap in the General Code requirements relative to remanufactured equipment.

- Paragraph G-S.1.2. Remanufactured Devices and Remanufactured Main Elements is a nonretroactive requirement for marking a device with the remanufacturer's information and became enforceable as of January 1, 2002. WMD believes that this paragraph was intended to apply to remanufactured devices and remanufactured main elements that have been placed into commercial service as of the effective date of the requirement, which was January 1, 2002.

- Paragraph G-A.6. Nonretroactive Requirements (which provides the various conditions in which nonretroactive requirements apply) does not include references to "remanufactured devices" or "remanufactured main elements." Subparagraph (a) (of G-A.6.) references and applies to "manufactured" devices within a state. Appendix D of HB 44 defines a "manufactured" device as any commercial weighing or measuring device shipped as new from the original equipment manufacturer (OEM). Subparagraph (b) could be applied to remanufactured devices that are brought into a state, but could not be applied to those devices installed by a remanufacturer or distributor operating within the state. Subparagraph (c) applies to devices placed into commercial service that had previously been used in noncommercial applications.

If paragraph G-A.6. does not apply to remanufactured devices, then paragraph G-S.1.2. cannot be applied to remanufactured devices as it is currently written. Additional details on this item were included in the Sector's 2010 Agenda and in the NCWM S&T Committee's 2010 Interim and Annual Reports.

The S&T Committee is considering a change to paragraph G-A.6. to clarify its application to "remanufactured" equipment. However, the Committee heard suggestions from two regional Weights and Measures associations, industry representatives, and remanufacturers requesting the item be made informational to give the device remanufacturers additional time to evaluate the impact of the proposed amendment to G-A.6.

This item was included on the Sector's agenda to keep Sector members informed of the issue and allow opportunity for input should time permit.

Discussion: Sector Chairman, Mr. Keilty, and Sector and NCWM S&T Committee Technical Advisor, Ms. Butcher, summarized the background information on this item. During discussions of this issue, some Sector members asked about definitions for the difference between "remanufactured" and "repaired." Ms. Butcher noted that, in proposing this item, NIST WMD is not attempting to redefine these terms or to suggest that the community change how it addresses these devices; the proposal is only attempting to correct a gap in the current HB 44 language. NTEP Director, Mr. Truex, who also served as the Chairman of the NCWM Task Force on

Remanufactured Equipment, also noted that the terms were already defined (see HB 44, Appendix D) by that Task Force and guidelines were already adopted by the NCWM to define how the terms apply.

Mr. Doug Long, RDM Electronics, noted that in remanufacturing, companies are not supposed to be changing designs, only bringing equipment back up to its original condition. These changes are more like repairs and eighty percent of these changes are of a cosmetic nature. Mr. Truex pointed out the additional caveat of G-A.6., which notes that if you bring such a device into another state, you would have to make that device like new and it would have to meet current requirements. While that might sound unfair, the requirement is already in HB 44.

Decision: The Sector did not have any specific technical guidance to offer on this issue. However, the Sector recognized the need for those affected by the proposed change to study it carefully.

13. Product Depletion Test Paragraph T.4. (HB 44 Section 3.31. Vehicle-Tank Meters) *(S&T Item – New Item)*

Source: Northeast Weights and Measures Association (NEWMA)

(**NOTE**: *Measuring Sector member Mr. Karimov, Liquid Controls, requested that this item be included on the Sector's agenda for discussion.*)

Purpose: Modify the VTM code to base the product depletion test tolerances on the meter's maximum flow rate (a required marking on all meters), rather than the meter size. This will enable more consistent application of the tolerances for older meters, which are not required to be marked with the meter size, and address an unintentional gap which allows an unreasonably large tolerance for smaller meters.

Background: The NCWM S&T Committee is considering the following changes to paragraph T.4. The proposed changes would base the tolerances for the product depletion test on the maximum flow rate of the meter rather than the meter size. This item previously appeared on the S&T Committee's Developing Items agenda and was elevated to a carryover item as a result of discussions at the July 2010 NCWM Annual Meeting. Additional background information can be found in the 2010 Final Report of the S&T Committee.

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

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

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

Table T.4. **Tolerances for Typical Vehicle-Tank Meters on Product Depletion Tests, Except Milk Meters** **Refer to T.4. for meters with maximum flow rates not listed.**	
Meter ~~Size~~ Maximum Flow Rate	**Maintenance and Acceptance Tolerances**
~~Up to, but not including, 50 mm (2 in)~~ **114 Lpm (30 gpm)**	**~~1.70 L (104 in^3)[1]~~** **0.57 L (0.15 gal) (34.6 in^3)[1]**
~~From 50 mm (2 in) up to, but not including, 75 mm (3 in)~~ **225 Lpm (60 gpm)**	**~~2.25 L (137 in^3)[1]~~** **1.1 L (0.30 gal) (69.3 in^3)[1]**
~~75 mm (3 in) or larger~~ **378 Lpm (100 gpm)**	**~~3.75 L (229 in^3)[1]~~** **1.9 L (0.5 gal) (115 in^3)[1]**
758 Lpm (200 gpm)	**3.8 L (1.0 gal) (231 in^3)[1]**
[1] Based on a test volume of at least the amount specified in N.3. Test Drafts.	

(Table Added 2005) **(Amended 201X)**

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

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

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

Table T.4. **Tolerances for Typical Vehicle-Tank Meters on Product Depletion Tests, Except Milk Meters** **Refer to T.4 for meters with flow rates not listed.**	
Meter ~~Size~~ Maximum Flow Rate	**Maintenance and Acceptance Tolerances**
~~Up to, but not including, 50 mm (2 in)~~ **114 Lpm (30 gpm)**	**~~1.70 L (104 in^3)[1]~~** **0.57 L (0.18 gal) (41.6 in^3)[1]**
~~From 50 mm (2 in) up to, but not including, 75 mm (3 in)~~ **225 Lpm (60 gpm)**	**~~2.25 L (137 in^3)[1]~~** **1.1 L (0.36 gal) (83.2 in^3)[1]**
~~75 mm (3 in) or larger~~ **378 Lpm (100 gpm)**	**~~3.75 L (229 in^3)[1]~~** **1.9 L (0.6 gal) (139 in^3)[1]**
758 Lpm (200 gpm)	**3.8 L (1.0 gal) (231 in^3)[1]**
[1] Based on a test volume of at least the amount specified in N.3. Test Drafts.	

(Table Added 2005) **(Amended 201X)**

***Editor's Note**: The metric and customary values in the proposed changes to the table are not equivalent. This point needs to be addressed in any final proposal.*

This item was included on the Measuring Sector's agenda to keep Sector members informed of the item and to allow for Sector comment, discussion, and input to the S&T Committee. See the S&T Committee's 2010 Final Report and 2011 Interim Agenda for details.

Discussion: Mr. Cooper, Tuthill Transfer Systems, commented that concerns may arise regarding whether or not meters with smaller maximum flow rates will be able to meet the proposed change in tolerances since the revised tolerances are much tighter for the smaller meter sizes. Sector Chairman, Mr. Keilty, Endress and Hauser, noted that data should be supplied to illustrate whether or not the smaller meters can meet the revised tolerances. Sector Technical Advisor, Ms. Butcher, NIST WMD, noted that the uncertainties in the test process should also be considered in the tests of smaller meters to ensure that the revised tolerances are appropriate, but also noted that the tolerance based on maximum flow rate seems logical. She also suggested that the Sector consider proposing that, if the revised tolerances are adopted, the marking requirement for meter size in paragraph S.5.7. Meter Size be eliminated from the code. This marking requirement was added to assist inspectors in applying the current product depletion tolerance, which is based on meter size.

Decision: The Sector did not have any specific technical guidance to offer on this issue. However, some members cited concerns regarding whether smaller meters can meet the tighter tolerances. Others suggested that the S&T Committee consider asking for data to support the proposed change and also consider the uncertainties in the test process relative to the tolerance to ensure that the proposed tolerances are appropriate.

14. N.5.1. Verification of Master Meter Systems for Testing of Farm Milk Tanks (HB 44 Section 4.42 Farm Milk Tanks) *(S&T Item – New Item)*

Source: Central Weights and Measures Association (CWMA)

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

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

> **N.5.1. Verification of Master Metering Systems.** – A master metering system used to gauge a milk tank shall be verified before and after the gauging process. A master metering system used to calibrate a milk tank shall be verified before starting the calibration and re-verified every quarter of the tank capacity or every 2000 L (500 gal), whichever is greater. **A master metering system capable of operating within 25 % of the applicable tolerance in T.3. Basic Tolerance Values needs only be verified before and after the gauging process.**
>
> **(Added 201X)**

Background/Discussion: (2010 Developing Item Part 4.42, Farm Milk Tanks - Item 1: N.5.1. Verification of Master Metering Systems) The CWMA received a proposal at its fall 2008 Interim Meeting to modify paragraph N.5.1. Verification of Master Metering Systems in NIST HB 44 Section 4.42. Farm Milk Tanks. USDA provided data suggesting that mass flow meters currently used to test milk tanks would not have to be verified every quarter of the tank capacity, or every 2000 L (500 gal), whichever is greater. The CWMA does not have data that supports that all mass flow meters will perform to the same standard. Based on this information the CWMA recommends this proposal be Informational and is considering the proposal outlined in the recommendation above.

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

> The use of a mass flow meter has eliminated the variations seen in other types of meters used to calibrate or check farm bulk milk tanks. The reverification of the meter at every quarter of tank capacity adds time and potentially introduces errors by requiring the hose or valves to be moved before the tank is totally filled. This proposal originated by Mr. Tom MacNish, from the Cleveland Market Administrator, and was

presented to the CWMA in September (2008). Mass flow meters have been used extensively in their market with excellent results.

Data submitted with this item is posted on the S&T Committee's web page on the Members Only section of the NCWM website at:

http://www.ncwm.net/members/index.cfm?fuseaction=st

At the 2010 NCWM Annual Meeting, the Committee heard comments from Mr. Ross Andersen, New York, reiterating NEWMA's request to place this item on the NCWM S&T Committee's 2011 Interim Agenda.

The Committee agreed to NEWMA's request and included this item in the list of carryover items submitted to the fall 2010 regional weights and measures association meetings.

This item was included on the Measuring Sector's agenda to keep Sector members informed of the item and to allow for Sector comment, discussion, and input to the S&T Committee.

Discussion: Sector Chairman, Mr. Keilty, Endress and Hauser, provided background on this issue. Several Sector members commented that the proposal makes sense, particularly for large tanks where the testing process can be quite lengthy. Sector Technical Advisor, Ms. Butcher, NIST WMD, noted that NIST WMD's Laboratory Metrology Group has had multiple inquiries about developing a standard on master meters, but to date no one has agreed to take on this task. However, it is necessary to look at the uncertainties in the test process to be sure that the proposed tolerance is achievable.

Decision: The Sector did not have any specific technical guidance to offer on this issue. However, Sector members generally noted support of the proposal since it would eliminate unnecessary testing and, hopefully, eliminate some uncertainties in the test process.

15. S.2.6. Thermometer Well – Proposed New Paragraph for HB 44 Section 3.31. Vehicle-Tank Meters Code (S&T)

Source: Fall 2010 NCWM S&T Committee Proposal to 2010 Regional Weights and Measures Associations

(**NOTE:** *Measuring Sector member Mr. Karimov, Liquid Controls, also requested that this item be included on the Sector's agenda for discussion.*)

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

Background: The NCWM S&T Committee announced at the July 2010 Annual Meeting that it intended to submit a proposal for consideration by the weights and measures community to nonretroactively require means (e.g., thermometer wells) for determining the temperature of the product at the meter during meter testing.

During discussions of proposed changes to the tolerances for VTMs (which were ultimately adopted in July 2010) equipped with automatic temperature compensating systems (paragraph T.2.1.), meter manufacturers expressed concerns about how to ensure that consistent and appropriate test procedures and equipment be used by weights and measures officials during inspections of VTMs. NIST WMD revised the Examination Procedure Outlines for VTMs and presented this information during a training seminar in April 2010. In the process of revising and presenting the procedures, WMD received comments indicating that many VTMs are not equipped with means for determining the temperature of the product at the meter. Thus, the inspector is unable to properly apply paragraph N.5. Temperature Correction for Refined Petroleum Products; paragraph N.5. requires the inspector to make corrections for any changes in volume resulting from differences in liquid temperatures between the time of passage through the meter and the time of volumetric determination in the prover.

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

The S&T Committee submitted a proposal to several 2010 regional weights and measures associations to non-retroactively require a thermometer well for all VTMs.

This item was included on the Measuring Sector's agenda to keep Sector members informed of the item and to allow for Sector comment, discussion, and input to the S&T Committee. See the NCWM S&T Committee's 2011 Agenda for details.

Discussion: The Sector discussed possible locations where the thermometer well might be placed into the system, recognizing that similar paragraphs in other codes recognize more than one possible location for the well such as piping adjacent to the meter. Mr. Buttler, Emerson Process Management – Micro Motion Inc., noted that some aspects of the proposed paragraph appear to be more of a user requirement than a device specification. Mr. Tucker, RL Tucker Consulting LLC, pointed out that during discussions at the WWMA, questions were raised regarding why the threshold was 20 gpm rather than 30 gpm, which coincides with the requirement for marking minimum and maximum flow rate on the meter. Sector Technical Advisor and Technical Advisor to the NCWM S&T Committee, Ms. Butcher, commented that the Committee considered whether to use 20 gpm or 30 gpm as the threshold, noting both thresholds appear in various requirements within the code. The 20 gpm threshold was selected because inspectors frequently use provers with capacities of 25 gal and larger to test VTMs and the impact of the temperature difference on these sizes of test drafts can be significant relative to the applicable tolerance. Ms. Butcher pointed out the example cited in the S&T's proposal, in which a one-degree difference in temperature between the liquid at the meter and in the prover can result in a difference of about 16 in^3 gasoline and 11 in^3 on diesel on a 100 gal test draft. On a 100 gal test draft, the applicable acceptance tolerance is only 35 in^3. The impact on of a temperature difference on a 25 gal test draft would be a quarter of this, but the applicable tolerance is also less.

Mr. Beattie, Measurement Canada, noted that they have been making corrections to account for temperature for some time, but also noted that they may run additional runs to stabilize the temperature between the two systems. He also noted that they set a limit on the amount of variation in temperature between the two systems before starting an official test run. Mr. Mike Gallo, CLEANFUEL USA, expressed support for doing a "wet down" run for each meter as is done with liquefied petroleum gas systems. His experience indicates that the temperatures equalize after doing a "wet down" run.

Decision: The Sector did not have any specific technical guidance to offer on this issue. However, some members suggested that the S&T Committee consider requiring wet down runs on each meter test as an alternative to requiring a thermometer well. Another member suggested the Committee consider whether or not the threshold for requiring a thermometer well in a system should be meters marked with maximum flow rates of 20 gpm or 30 gpm.

Appendix A – NTEP Technical Policy C. Product Families for Meters
2010 Measuring Sector Meeting Summary

C. Product Categories and Families for Meters

When submitting a meter for evaluation, the manufacturer must specify the product categor(y)(ies) and/or famil(y)(ies) and critical parameters for which the meter is being submitted.

Product Category: A group of products that share similar characteristics.

Note: Under certain Test Requirements, product coverage is indicated by reference to the "Product Category," while under other Test Requirements, product coverage is indicated by "Product Family."

Product Family: A group of products, sometimes including multiple Product Categories, which share a common Test Requirement.

Note: Coverage of different products by a certificate may be indicated using references to either "Product Categories" or "Product Families," as indicated in the Test Requirement for that Product Family.

The product family and the specific product subgroup covered by the Certificate are to be identified on Page 1 of the Certificate of Conformance. More detailed information, including the typical product types found in the subgroup, is to be included in the application section of the Certificate.

Mass Meter Product Category & Test Requirements	Magnetic Flow Meter Product Category & Test Requirements	Positive Displacement Flow Meter Product Category & Test Requirements	Turbine Flow Meter Product Category & Test Requirements
Test B - To cover a range of the following products, test with one product having a low specific gravity and test with a second product having a high specific gravity. The Certificate of Conformance will cover all-products in all product categories listed in the table under Test B within the specific gravity range tested. (Test B does not apply to product categories of liquefied gases, compressed liquids, cryogenic liquids or heated products.) **Note:** Product categories under Test B were formerly referred to collectively as "Normal Liquids."	**Test F –** To cover a range of the following products, test with one product having a specified conductivity. The Certificate of Conformance will cover all products with conductivity equal to or above the conductivity of the tested liquid. (Test F does not apply to product categories of potable water, non-potable water and tap water; water mixes of alcohols and glycols; fertilizers; suspension fertilizers; liquid feeds; clear liquid fertilizers; chemicals or crop chemicals A, B, C, or D.) (Test F does not apply to product categories of liquefied gases, or compressed liquids.)	**Test C -** To cover a range of products within each product category, test with one product having a low viscosity and test with a second product having a high viscosity within each category. The Certificate of Conformance will cover all products in the product category within the viscosity range tested.	**Test E –** To cover a range of products within each product category, test with one product having a low kinematic viscosity and test with a second product having a high kinematic viscosity within each category. The Certificate of Conformance will cover all products in the product category within the kinematic viscosity range tested. **Note:** See note 5.

Mass Meter Product Category & Test Requirements			**Magnetic Flow Meter Product Category & Test Requirements**			**Positive Displacement Flow Meter Product Category & Test Requirements**		**Turbine Flow Meter Product Category & Test Requirements**	
Typical Products	**Specific Gravity (60 F)**	**Product Category**	**Typical Products**	**Conductivity (micro-Siemens/centimeter)**	**Product Category**	**Product Category:** Fuels, Lubricants, Industrial and Food Grade Liquid Oils (FL&O)		**Product Category:** Fuels, Lubricants, Industrial and Food Grade Liquid Oils (FL&O)	
Asphalt		FL&O	Gasoline		FL&O	**Typical Products**	**Reference Viscosity (60 F)**	**Typical Products**	**Reference Viscosity (60 F)**
Avgas		FL&O	JP4		FL&O		**Centipoise (cP)**		**Centipoise (cP)**
Jet A		FL&O	Jet A-1		FL&O	Gasoline	0.28	Gasoline	0.28
Jet B		FL&O	JP7 & JP8		FL&O	JP4	1.02	JP4	1.02
Spindle Oil		FL&O	Kerosene		FL&O	Jet A-1	1.36	Jet A-1	1.36
Adjuvants	0.7 - 1.2	CC	JP5		FL&O	JP7 & JP8	1.82	JP7 & JP8	1.82
Banvel	0.7 - 1.2	CC	Corn Oil		FL&O	Kerosene	1.94	Kerosene	1.94
Fumigants	0.7 - 1.2	CC	Cooking Oils		FL&O	JP5	1.94	JP5	1.94
Fungicides	0.7 - 1.2	CC	Diesel Fuel		FL&O	Corn Oil	4	Corn Oil	4
Herbicides	0.7 - 1.2	CC	Biodiesel above B20		FL&O	Cooking Oils	9.93	Cooking Oils	9.93
Insecticides	0.7 - 1.2	CC	Light Oil		FL&O	Diesel Fuel	10	Diesel Fuel	10
Paraquat	0.7 - 1.2	CC	Sunflower Oil		FL&O	Biodiesel above B20	10.12	Biodiesel above B20	10.12
Prowl	0.7 - 1.2	CC	Soy Oil	0	FL&O	Light Oil	13.47	Light Oil	13.47
Round-up	0.7 - 1.2	CC	Olive Oil		FL&O	Sunflower Oil	90.1	Sunflower Oil	90.1
Touchdown	0.7 - 1.2	CC	Vegetable Oil	0	FL&O	Soy Oil	90.6	Soy Oil	90.6
Treflan	0.7 - 1.2	CC	Bunker Oil		FL&O	Olive Oil	116.8	Olive Oil	116.8
Ammonia Nitrate	1.16-1.37	Fert	Avgas		FL&O	Vegetable Oil	133	Vegetable Oil	133
Crude Oil	0.79-0.97	FL&O	Jet A		FL&O	Bunker Oil	11,200	Bunker Oil	11,200
Lubricating Oils	0.80-0.90	FL&O	Jet B		FL&O	Avgas	1.5 to 6	Avgas	1.5 to 6
Peanut Oil	0.9-1.0	FL&O	Asphalt		FL&O	Jet A	1.5 to 6	Jet A	1.5 to 6

Mass Meter Product Category & Test Requirements			**Magnetic Flow Meter Product Category & Test Requirements**			**Positive Displacement Flow Meter Product Category & Test Requirements**		**Turbine Flow Meter Product Category & Test Requirements**	
Hexane	0.66	Sol Gen	Peanut Oil		FL&O	Jet B	1.5 to 6	Jet B	1.5 to 6
Diesel Fuel	0.84	FL&O	SAE Grades		FL&O	Asphalt	100 – 5000	Asphalt	100 – 5000
Gasoline	0.72	FL&O	Lubricating Oils		FL&O	Peanut Oil	11 to 110	Peanut Oil	11 to 110
Kerosene	0.75	FL&O	Crude Oil		FL&O	SAE Grades	192-3626	SAE Grades	192-3626
Jet A-1	0.76	FL&O	6 Oil (#5, #6)		FL&O	Lubricating Oils	20 to 1000	Lubricating Oils	20 to 1000
JP4	0.76	FL&O	Fuel Oil (#1, #2, #3, #4)	0	FL&O	Crude Oil	3-1783	Crude Oil	3-1783
JP5	0.76	FL&O	Spindle Oil		FL&O	6 Oil (#5, #6)	66-13,000	6 Oil (#5, #6)	66-13,000
JP7 JP8	0.76	FL&O	Acetone	.02	Sol Gen	Fuel Oil (#1, #2, #3, #4)	8 to 88	Fuel Oil (#1, #2, #3, #4)	8 to 88
Ethanol	0.79	Alc Gly	Hexane	0	Sol Gen	Spindle Oil		Spindle Oil	
Isopropyl	0.79	Alc Gly	Acetates		Sol Gen	**Test C** - **Product Category:** Solvents General (Sol Gen)		**Test E** - **Product Category:** Solvents General (Sol Gen)	
Acetone	0.8	Sol Gen	MEK	0.1	Sol Gen	**Typical Products**	**Reference Viscosity* (60 F)**	**Typical Products**	**Reference Viscosity* (60 F)**
Methanol	0.80	Alc Gly	Toluene	0	Sol Gen		**Centipoise (cP)**		**Centipoise (cP)**
Butanol	0.81	Alc Gly	Xylene	0	Sol Gen	Acetone	0.34	Acetone	0.34
Isobutyl	0.81	Alc Gly	Ethylacetate	0.00001	Sol Gen	Hexane	0.34	Hexane	0.34
MEK	0.81	Sol Gen	Methylene-Chloride		Sol Chl	Acetates	0.44	Acetates	0.44
Biodiesel above B20	0.86	FL&O	Trichloro-Ethylene		Sol Chl	MEK	0.45	MEK	0.45
Light Oil	0.86	FL&O	Carbon Tetra-Chloride		Sol Chl	Toluene	0.62	Toluene	0.62
Toluene	0.87	Sol Gen	Perchloro-Ethylene		Sol Chl	Xylene	0.86	Xylene	0.86
20% Aqua-	0.89	Fert	Methanol	0.44	Alc Gly	Ethylacetate	1.36	Ethylacetate	1.36

Mass Meter Product Category & Test Requirements			**Magnetic Flow Meter Product Category & Test Requirements**			**Positive Displacement Flow Meter Product Category & Test Requirements**		**Turbine Flow Meter Product Category & Test Requirements**	
Ammonia									
Xylene	0.89	Sol Gen	Ethanol	0.0013	Alc Gly	**Test C** - **Product Category:** Solvents Chlorinated (Sol Chl)		**Test E** - **Product Category:** Alcohols, Glycols & Water Mixes Thereof (Alc Gly)	
6 Oil (#5, #6)	0.9	FL&O	Isopropyl	3.5	Alc Gly	**Typical Products**	**Reference Viscosity* (60 F)**	**Typical Products**	**Reference Viscosity* (60 F)**
Fuel Oil (#1, #2, #3, #4)	0.9	FL&O	Butanol		Alc Gly		**Centipoise (cP)**		**Centipoise (cP)**
SAE Grades	0.9	FL&O	Isobutyl	0.02	Alc Gly	Methylene-Chloride	0.46	Methanol	0.64
Corn Oil	0.91	FL&O	Ethylene glycol		Alc Gly	Trichloro-Ethylene	0.6	Ethanol	1.29
Cooking Oils	0.92	FL&O	Propylene glycol		Alc Gly	Carbon Tetra-Chloride	0.99	Isopropyl	2.78
Olive Oil	0.92	FL&O	Demineralized		Water	Perchloro-Ethylene	1	Butanol	3.34
Vegetable Oil	0.92	FL&O	Deionized		Water	**Test C** - **Product Category:** Alcohols, Glycols & Water Mixes Thereof (Alc Gly)		Isobutyl	4.54
Acetates	0.93	Sol Gen	Asphalt		Heated	**Typical Products**	**Reference Viscosity* (60 F)**	Ethylene glycol	25.5
Soy Oil	0.93	FL&O	Bunker C		Heated		**Centipoise (cP)**	Propylene glycol	54
			Test D – To obtain coverage for a product category: Test with one product in the product category. The Certificate of Conformance will cover all products in the category.			Methanol	0.64	**Test E** - **Product Category:** Compressed liquids, Fuels and Refrigerants, NH_3	
Sunflower Oil	0.93	FL&O	(Test D does not apply to product categories of pure alcohols and pure glycol, pure water, solvents chlorinated, solvents general, and fuels, lubricants,					**Typical Products**	**Reference Viscosity* (60 F) Centipoise (cP)**

Mass Meter Product Category & Test Requirements			**Magnetic Flow Meter Product Category & Test Requirements**			**Positive Displacement Flow Meter Product Category & Test Requirements**		**Turbine Flow Meter Product Category & Test Requirements**	
Ethylacetate	0.96	Sol Gen	industrial and food grade liquid oils.) (Test D does not apply to product categories of liquefied gases, compressed liquids or heated products.)			Ethanol	1.29	Propane	0.098
								Anhydrous Ammonia	0.188
Bunker Oil	0.99	FL&O				Isopropyl	2.78	Butane	0.19
Beverages	1.0	Water				Butanol	3.34	Freon 11	0.313
Deionized	1.0	Water	Tap water	72**	Water	Isobutyl	4.54	Freon 12	0.359
Demineralized	1.0	Water	Potable	72**	Water	Ethylene glycol	25.5	Freon 22	1.99
Juices	1.0	Water	Nonpotable	72**	Water	Propylene glycol	54	Ethane	
Milk	1.0	Water	Juices		Water	**<u>Test C</u> - <u>Product Category:</u>** Clear Liquid Fertilizers (Liq Fert)		**<u>Test A</u> –** The following products must be individually tested and noted on the Certificate of Conformance.	
Nonpotable	1.0	Water	Beverages		Water	**Typical Products**	**Reference Viscosity* (60 F)**		
Potable	1.0	Water	Water mixes of alcohols & glycols		Alc Gly		**Centipoise (cP)**	**Typical Products**	**Product Category**
Tap Water	1.0	Water	Urea	5000	Fert	Urea	1	Methylene-Chloride	Sol Chl
Propylene glycol	1.04	Alc Gly	Ammonia Nitrate		Fert	Ammonia Nitrate	11.22	Trichloro-Ethylene	Sol Chl
Hydrochloric Acid	1.1	Chem	10-34-0		Fert	10-34-0	48	Carbon Tetra-Chloride	Sol Chl
Ethylene glycol	1.19	Alc Gly	20% Aqua-Ammonia		Fert	20% Aqua-Ammonia	1.1 – 1.3	Perchloro-Ethylene	Sol Chl
Liquid Molasses	1.25	Liq Feed	Clear Liquid Fert		Fert	Clear Liquid Fert	31 - 110	Urea	Liq Fert
9-18-9	1.32	Fert	Nitrogen Solution		Fert	Nitrogen Solution	31 - 110	Ammonia Nitrate	Liq Fert
Methylene-Chloride	1.34	Sol Chl	28%, 30% or 32%		Fert	28%, 30% or 32%	31 - 110	10-34-0	Liq Fert

Mass Meter Product Category & Test Requirements			**Magnetic Flow Meter Product Category & Test Requirements**			**Positive Displacement Flow Meter Product Category & Test Requirements**		**Turbine Flow Meter Product Category & Test Requirements**	
10-34-0	1.39	Fert	N-P-K solutions		Fert	N-P-K solutions		20% Aqua-Ammonia	Liq Fert
Trichloro-Ethylene	1.47	Sol Chl	9-18-0		Fert	9-18-0		Chlear Liquid Fert	Liq Fert
Carbon Tetra-Chloride	1.6	Sol Chl	4-4-27		Sus Fert	**Test C** - **Product Category:** Suspension Fertilizers (Sus Fert)		Nitrogen Solution	Liq Fert
Perchloro-Ethylene	1.6	Sol Chl	3-10-30		Sus Fert	**Typical Products**	**Reference Viscosity* (60 F)**	28%, 30% or 32%	Liq Fert
Sulfuric Acid	1.83	Chem	Molasses plus Phos Acid and/or Urea (TreaChle)		Liq Feed		**Centipoise (cP)**	N-P-K solutions	Liq Fert
Phosphoric Acid	1.87	Chem	Liquid Molasses	300	Liq Feed	4-4-27	20 – 215	9-18-0	Liq Fert
Urea	1.89	Fert	Sulfuric Acid	209000	Chem	3-10-30	100 – 1000	4-4-27	Sus Fert
Fungicides	1 – 1.2	CC	Phosphoric Acid	56600	Chem	**Test C** - **Product Category:** Liquid Feeds (Liq Feed)		3-10-30	Sus Fert
Micronutrients	1 – 1.2	CC	Hydrochloric Acid	395000	Chem	**Typical Products**	**Reference Viscosity* (60 F)**	Molasses plus Phos Acid and/or Urea (TreaChle)	Liq Feed
Molasses plus Phos Acid and/or Urea (TreaChle)	1.1 to 1.3	Liq Feed	Herbicides		CC-A		**Centipoise (cP)**	Liquid Molasses	Liq Feed
3-10-30	0.9 – 1.65	Liq Fert	Round-up		CC-A	Molasses plus Phos Acid and/or Urea (TreaChle)	2882	Asphalt	Heated
4-4-27	0.9 – 1.65	Liq Fert	Touchdown		CC-A	Liquid Molasses	8640	Bunker C	Heated

Mass Meter Product Category & Test Requirements			**Magnetic Flow Meter Product Category & Test Requirements**			**Positive Displacement Flow Meter Product Category & Test Requirements**		**Turbine Flow Meter Product Category & Test Requirements**	
Micronutrients	0.9 – 1.65	Liq Fert	Banvel		CC-A	**Test C** - **Product Category:** Heated Products (Heated)		Sulfuric Acid	Chem
28%, 30% or 32%	1.28 – 1.32	Fert	Treflan		CC-A	**Typical Products**	**Reference Viscosity* (60 F)**	Phosphoric Acid	Chem
N-P-K solutions	1.2 – 1.4	Fert	Paraquat		CC-A		**Centipoise (cP)**	Hydrochloric Acid	Chem
Clear Liquid Fert	1.17 – 1.44	Fert	Prowl		CC-A	Asphalt	100 – 5000	Herbicides	CC-A
Nitrogen Solution	1.17 – 1.44	Fert	Herbicides		CC-A	Bunker C	11,200	Round-up	CC-A
			Fungicides		CC-B	**Test C** - **Product Category:** Chemicals (Chem)		Touchdown	CC-A
			Insecticides		CC-B	**Typical Products**	**Reference Viscosity* (60 F)**	Treflan	CC-A
Test D – To obtain coverage for each of the following product categories, test with one product in each product category. The Certificate of Conformance will cover the products in the product category in which a product was tested.			Adjuvants		CC-B			Banvel	CC-A
			Fumigants		CC-B	Sulfuric Acid	1.49	Paraquat	CC-A
			Fungicides		CC-C	Phosphoric Acid	161	Prowl	CC-A
Product Category	**Typical Products**	**Specific Gravity[2] (60 F)**	Micronutrients		CC-D	Hydrochloric Acid	0.80 – 1. 0	Herbicides	CC-A
Comp gas	Compressed Natural Gas (CNG)	0.6 to 0.8 (1=Air)				**Test C** - **Product Category:** Crop Chemicals (Type A) (CC-A)		Fungicides	CC-B

Mass Meter Product Category & Test Requirements			**Magnetic Flow Meter Product Category & Test Requirements**		**Positive Displacement Flow Meter Product Category & Test Requirements**		**Turbine Flow Meter Product Category & Test Requirements**	
Product Category	**Typical Products**	**Specific Gravity[2] (60 F)**			**Typical Products**	**Reference Viscosity* (60 F)**	Insecticides	CC-B
Comp liq	Anhydrous Ammonia	0.61				**Centipoise (cP)**	Adjuvants	CC-B
Comp liq	Butane	0.595			Herbicides	4 – 400	Fumigants	CC-B
Comp liq	Ethane				Round-up	4 – 400	Fungicides	CC-C
Comp liq	Freon 11	1.49			Touchdown	4 – 400	Micronutrients	CC-D
Comp liq	Freon 12	1.33			Banvel	4 – 400	Dual	Flow
Comp liq	Freon 22	1.37			Treflan	4 – 400	Bicep	Flow
					Paraquat	4 – 400	Marksman	Flow
Comp liq	Propane	0.504			Prowl	4 – 400	Broadstrike	Flow
Test D – To obtain coverage for each of the following product categories, test with one product in each product category. The Certificate of Conformance will cover the products in the product category in which a product was tested.								
Product Category	**Typical Products**	**Specific Gravity[2] (60 F)**			**Test C - Product Category:** Crop Chemicals (Type B) (CC-B)		Doubleplay	Flow
Cryo LNG	Liquefied Natural Gas				**Typical Products**	**Reference Viscosity* (60 F)**	Topnotch	Flow
Cryo LNG	Liquefied Oxygen	0.66				**Centipoise (cP)**	Guardsman	Flow
Cryo LNG	Nitrogen	0.31			Fungicides	0.7 – 100	Harness	Flow
					Insecticides	0.7 – 100	NH_3	

Mass Meter Product Category & Test Requirements			**Magnetic Flow Meter Product Category & Test Requirements**		**Positive Displacement Flow Meter Product Category & Test Requirements**		**Turbine Flow Meter Product Category & Test Requirements**	
					Adjuvants	0.7 – 100	**Test D –** To obtain coverage for a product category: Test with one product in the product category. The Certificate of Conformance will cover all products in the category.	
					Fumigants	0.7 – 100		
Test D – To obtain coverage for each of the following product categories, test with one product in each product category. The Certificate of Conformance will cover the products in the product category in which a product was tested.					**Test C - Product Category:** Crop Chemicals (Type C) (CC-C)			
Product Category	**Typical Products**	**Specific Gravity[2] (60 F)**			**Typical Products**	**Reference Viscosity* (60 F)**	Tap Water	Water
Heated Products	Asphalt					**Centipoise (cP)**	Deionized	Water
Heated Products	Bunker C	1.1			Fungicides	20 – 900	Demineralized	Water
					Test C **Product Category:** Crop Chemicals (Type D) (CC-D)		Potable	Water
					Typical Products	**Reference Viscosity* (60 F)**	Nonpotable	Water
						Centipoise (cP)	Juices	Water
					Micronutrients	20 – 1000	Beverages	Water
					Test C - Product Category: Flowables (Flow)		Milk	Water
					Typical Products	**Reference Viscosity* (60 F)**	Liquefied Oxygen	Cryo LNG
						Centipoise (cP)	Nitrogen	Cryo LNG
					Dual	20 – 900	Liquefied	Cryo LNG

Mass Meter Product Category & Test Requirements			Magnetic Flow Meter Product Category & Test Requirements		Positive Displacement Flow Meter Product Category & Test Requirements		Turbine Flow Meter Product Category & Test Requirements	
							Natural Gas	
					Bicep	20 – 900		
					Marksman	20 – 900		
					Broadstrike	20 – 900		
					Doubleplay	20 – 900		
					Topnotch	20 – 900		
					Guardsman	20 – 900		
					Harness	20 – 900		
					Test C - Product Category: Compressed Liquids: Fuels and Refrigerants (Comp liq)			
					Typical Products	**Reference Viscosity* (60 F)**		
						Centipoise (cP)		
					Propane	0.098		
					Anhydrous Ammonia	0.188		
					Butane	0.19		
					Freon 11	0.313		
					Freon 12	0.359		
					Freon 22	1.99		
					Ethane			
					Test D – To obtain coverage for a product category: Test with one product in the product category. The Certificate of Conformance will cover all products in the category.			

Mass Meter Product Category & Test Requirements			Magnetic Flow Meter Product Category & Test Requirements		Positive Displacement Flow Meter Product Category & Test Requirements		Turbine Flow Meter Product Category & Test Requirements	
					Product Category: All Water (Water)			
					Typical Products	**Reference Viscosity* (60 F)**		
						Centipoise (cP)		
					Tap Water	1.0		
					Deionized	1.0		
					Demineralized	1.0		
					Potable	1.0		
					Nonpotable	1.0		
					Juices	1.0		
					Beverages	1.0		
					Milk	1.0		
					Test A – The following products must be individually tested and noted on the Certificate of Conformance.			
					Product Category: Cryogenic Liquids and Liquefied Natural Gas (Cryo LNG)			
					Typical Products	**Reference Viscosity* (60 F)**		
						Centipoise (cP)		
					Liquefied Oxygen	0.038		
					Nitrogen	1.07		
					Liquefied Natural Gas			

• **Product Category Table – Category Abbreviations**	
Abbreviation	**Product Categories**
FL&O	Fuels, Lubricants, Industrial and Food Grade Liquid Oils
Solv Gen	Solvents General
Solv Cl	Solvents Chlorinated
Alc Gly	Alcohols, Glycols & Water Mixes thereof
Water	Water
Fert	Fertilizers
CC-A	Crop Chemicals *(Type A)*
CC-B	Crop Chemicals *(Type B)*
CC-C	Crop Chemicals *(Type C)*
CC-D	Crop Chemicals *(Type D)*
Flow	Flowables
Sus Fert	Suspension Fertilizers
Liq Feed	Liquid Feeds
Chem	Chemicals
Heated	Heated Products
Comp liq	Compressed Liquids: Fuels and Refrigerants NH_3
Comp gas	Compressed Gases
Cryo LNG	Cryogenic Liquids and Liquefied Natural Gas

[1]***Note**: The Typical Products listed in this table are not limiting or all-inclusive; there may be other products and product trade names, which fall into a product family. Water and a product such as stoddard solvent or mineral spirits may be used as test products in the fuels, lubricants, industrial, and food- grade liquid oils product family.*

[2] The specific gravity of a liquid is the ratio of its density to that of water at standard conditions, usually 4 °C (or 40 °F) and 1 atm. The density of water at standard conditions is approximately 1000 kg/m^3 (or 998 kg/m^3)

[3] Diesel fuel blends (biodiesel) with up to 20 % vegetable or animal fat/oil.

[4] Gasoline includes oxygenated fuel blends with up to 15 % oxygenate.

$$\text{Centistokes } (m^2/s) = \frac{\text{Centipoise (kg/m s)}}{\text{density (kg / m}^3\text{)}}$$

[5] Kinematic viscosity is measured in centistokes.

Source for some of the viscosity value information is in the Industry Canada - Measurement Canada "Liquid Products Group, Bulletin V-16-E (rev. 1), August 3, 1999."

**** Editor Note:** This data point is suspected to be lower than that of normal tap water supplied for residential consumption.

Appendix B
Action Items Table
October 1 - 2, 2010, NTETC Measuring Sector Meeting

Agenda Item	Title	Task	Responsible Person(s)	Due Date
1	Table of Key Characteristics of Products in Product Families for Meters Table	Make final editorial changes, (including removing editorial marks, moving heated products, and making general editorial formatting changes) to the table and forward to Chair and NTEP Director for submission to the NCWM NTEP Committee.	Technical Advisor, Ms. Tina Butcher	12/1/10
3	**Add Testing Criteria to NTEP Policy U "Evaluating electronic indicators submitted separate from a measuring element"**	Continue development of checklist, including:	Mr. Dan Reiswig, California DMS	Ongoing
		Contact list of possible work group members (as identified by Sector).	Mr. Dan Reiswig, California DMS	1/1/11
		Forward latest draft of checklist AND five areas requiring special attention (identified by Sector) to original work group members and list of possible contacts identified by Sector.	Mr. Dan Reiswig, California DMS	1/1/11
		Apprise Chairman, NTEP Director, and Technical Advisor of progress via e-mails or periodic reports.	Mr. Dan Reiswig, California DMS	Ongoing
		Present updated checklist to Sector for review and acceptance.	Work Group	2011 Sector Mtg
4	**Policy C - Product Family Table – Change in Upper Limit for Oxygenated Blends – Note 4**	Advise original submitter of Sector's decision.	Technical Advisor, Ms. Tina Butcher	12/1/10
5	**Electronic Linearization for Positive Displacement Meters**	Submit recommendation to modify NCWM Publication 14 to NTEP Committee	Technical Advisor, Ms. Tina Butcher	12/1/10
6	**Code Reference S.1.6.1. Indication of Delivery – Reference to Indicator Reset**	Submit recommendation to modify NCWM Publication 14 to NTEP Committee	Technical Advisor, Ms. Tina Butcher	12/1/10
7	**Water Meters Checklist**	(8) Forward current draft checklist to other companies who hold California Type Evaluation Program Certificates for Water Meters.	Mr. Andre Noel	12/1/10
		(9) Identify areas in NIST HB 44 Water Meters Code where updates are needed to reflect current technology and practices.	Water Meters Checklist Sub-Group: Mr. Andre Noel Mr. Dan Reiswig Mr. Jim Welsh (Others Identified)	7/1/11

Appendix B
Action Items Table
October 1 - 2, 2010, NTETC Measuring Sector Meeting

Agenda Item	Title	Task	Responsible Person(s)	Due Date
		(10) Forward any proposed changes to NIST HB 44 to the NCWM S&T Committee by developing and submitting an NCWM Form 15.	Water Meters Checklist Sub-Group	7/1/11
		(11) Identify differences between AWWA standards and NIST HB 44 and consider recommendations for aligning the two documents.	Water Meters Checklist Sub-Group	7/1/11
		(12) Copy the Chairman, Mr. Mike Keilty and Technical Advisor, Ms. Tina Butcher on communications to the group.	Water Meters Checklist Sub-Group	Ongoing
		(13) Copy Mr. Ralph Richter, NIST WMD, U.S. point of contact for OIML R49 with any proposed drafts.	Water Meters Checklist Sub-Group	Ongoing
		(14) Distribute an updated draft for review by the Sector by the 2011 NCWM Interim Meeting.	Water Meters Checklist Sub-Group	01/10/11
		(15) Distribute a final draft for review by the Sector at least one month prior to the 2011 Sector meeting.	Water Meters Checklist Sub-Group	8/15/11
8	**Hydrogen Gas-Measuring Devices Checklist**	(1) Contact Norm Ingram to request distribution of draft checklist.	Ms. Juana Williams, NIST WMD	11/15/10
		(2) Update USNWG on Sector's plans to develop checklist.	Ms. Juana Williams, NIST WMD	11/15/10
		(3) Update the checklist to correspond to the 2010 H ydrogen Measuring Devices Code.	Hydrogen Meters Checklist Sub-Group: Mr. Mike Keilty, Chairman Mr. Dennis Beattie, MC Mr. Marc Buttler, Micro Motion Mr. Dan Reiswig, California DMS Ms. Juana Williams, NIST	As assigned
		(4) Review the checklist and provide comments to Sub Group Chairman.	Hydrogen Meters Checklist Sub-Group	As assigned
		(5) Schedule web conference call(s) to discuss needed changes.	Sub-Group Chairman	Jan-July 2011
		(6) Finalize and present draft to the Sector for consideration.	Hydrogen Meters Checklist Sub-Group	8/15/11
		(7) Monitor USNWG progress on developing test procedures. Begin development of type evaluation test procedures when USNWG completes test procedures work.	Hydrogen Meters Checklist Sub-Group	Ongoing

Appendix B
Action Items Table
October 1 - 2, 2010, NTETC Measuring Sector Meeting

Agenda Item	Title	Task	Responsible Person(s)	Due Date
9	**Next Meeting**	Identify location and time of next SWMA Meeting and propose location to NTEP Committee	Chair, NTEP Director, Technical Advisor	2011 Interim Mtg
10	**G-S.1. Marking (Software) (S&T)**	Forward Sector comments to NCWM S&T Committee	Technical Advisor, Ms. Tina Butcher	2011 Interim Mtg
11	**G-S.8.1. Provision for Sealing (S&T)**	Forward Sector comments to NCWM S&T Committee	Technical Advisor, Ms. Tina Butcher	2011 Interim Mtg
12	**G-A.6. Nonretroactive Requirements (S&T)**	Forward Sector comments to NCWM S&T Committee	Technical Advisor, Ms. Tina Butcher	2011 Interim Mtg
13	**Product Depletion Test (S&T)**	Forward Sector comments to NCWM S&T Committee	Technical Advisor, Ms. Tina Butcher	2011 Interim Mtg
14	**N.5.1. Master Meter Systems- Farm Milk Tanks (S&T)**	Forward Sector comments to NCWM S&T Committee	Technical Advisor, Ms. Tina Butcher	2011 Interim Mtg
15	**S.2.6. Thermometer Well -VTMs (S&T)**	Forward Sector comments to NCWM S&T Committee	Technical Advisor, Ms. Tina Butcher	2011 Interim Mtg

Appendix C

National Conference on Weights and Measures / National Type Evaluation Program
Appendix C to 2010 Measuring Sector Summary

Measuring Sector Attendee List
October 1-2, 2010 / Columbia, SC

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National Conference on Weights and Measures / National Type Evaluation Program
Appendix C to 2010 Measuring Sector Summary

Measuring Sector Attendee List
October 1-2, 2010 / Columbia, SC

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Appendix C

National Type Evaluation Technical Committee (NTETC) Weighing Sector

August 31 - September 2, 2010
Columbus, Ohio

Meeting Summary

Carry-over Items: ..... **NTEP - 2**

1. Recommended Changes to Publication 14 Based on Actions at the 2010 NCWM Annual Meeting ..... NTEP - 2
   - 1.a. Scales, ABWS, and AWS Codes - Automatic Zero-Load Adjustment. ..... NTEP - 2
   - 1.b. T.N.4.5.3. Zero-Load Return. ..... NTEP - 3
   - 1.c. UR.2.6. Approaches ..... NTEP - 4
2. HB 44, G-S.8. Provisions for Sealing Adjustable Components ..... NTEP - 4
3. DES Section 66 (c) – Remove. ..... NTEP - 5

New Items: ..... **NTEP - 6**

4. HB 44, Scales Code – T.N.4.7. Amend Creep Recovery Tolerances for III L Load Cells ..... NTEP - 6
5. DES Section 11 - Indicating and Recording Elements – Use of the Comma as a Decimal Marker. ..... NTEP - 7
6. DES Section 42 - Zero-Load and Tare Adjustment - Rounding of Intermediate Values in an Equation. ..... NTEP - 8
7. HB 44 -2.10. T.N.4.5.1. Creep and Creep Recovery Requirements for Class III Scales with n > 4000 divisions. ..... NTEP - 10
8. NTEP Policy Clarification on Adding a CIM Controller to a Static RR Track Scale. ..... NTEP - 11
9. ECRS Section 8 - Power Failure ..... NTEP - 12
10. Acceptable Symbols/Abbreviations to Display the CC Number via a Device's User Interface ..... NTEP - 13

Next Sector Meeting: ..... **NTEP - 17**

Appendix A - Recommendations for Amendments to Publication 14 ..... **NTEP - 18**

Agenda Item 1.a. ..... NTEP - 18
Agenda Item 1.b. ..... NTEP - 21
Agenda Item 2. ..... NTEP - 22
Agenda Item 5. ..... NTEP - 24
Agenda Item 6. ..... NTEP - 24
Agenda Item 9 ..... NTEP - 25

Appendix B - List of Attendees ..... **NTEP - 26**

Attachments ..... **NTEP - 28**

Agenda Item 4. T.N.4.7. Amend Creep Recovery Tolerances for III L Load Cells ..... NTEP - 28

Glossary of Acronyms			
ABWS	Automatic Bulk Weighing Systems	NTEP	National Type Evaluation Program
AWS	Automatic Weighing Systems	NTETC	National Type Evaluation Technical Committee
CC	NTEP Certificate of Conformance	OIML	International Organization of Legal Metrology
CIM	Coupled-in-Motion (Railway Track Scales)	S&T	NCWM Specifications and Tolerances Committee
CWMA	Central Weights and Measures Association	SWMA	Southern Weights and Measures Association
ECRS	Electronic Cash Registers Interfaces with Scales	WG	Work Group
GIPSA	Grain Inspection Packers and Stockyards Administration	WMD	NIST Weights and Measures Division
NCWM	National Conference on Weights and Measures	WWMA	Western Weights and Measures Association
NEWMA	Northeastern Weights and Measures Association	WS	NTETC Weighing Sector
NIST	National Institute of Standards and Technology		
Unless Otherwise Stated: - "Handbook 44" (HB 44) means the 2010 Edition of NIST Handbook 44, "Specifications Tolerances, and Other Technical Requirements for Weighing and Measuring Devices." - "Handbook 130" (HB 130) means the 2009 Edition of NIST Handbook 130, "Uniform Laws and Regulations in the areas of legal metrology and fuel quality." - "Publication 14" (Pub 14) means the 2010 Edition of NCWM Publication 14 - Weighing Devices - Technical Policy - Checklists - Test Procedures.			
Note: NIST does not imply that these acronyms are used solely to identify these organizations or technical topics.			

Carry-over Items:

1. Recommended Changes to Publication 14 Based on Actions at the 2010 NCWM Annual Meeting

Source: The National Institute of Standards and Technology (NIST) Technical Advisor, Mr. Steve Cook, provided the Sector with specific recommendations for incorporating test procedures and checklist language based upon actions of the 2010 Annual Meeting of the 95th National Conference on Weights and Measures (NCWM). The Sector was asked to briefly discuss each item and, if appropriate, provide general input on the technical aspects of the issues.

1.a. Scales, ABWS, and AWS Codes - Automatic Zero-Load Adjustment.

Background: See the 2009 Summary of the Weighing Sector (WS) Agenda Item 8 and the Interim and Annual Reports of the 2010 NCWM Specifications and Tolerances (S&T) Committee agenda items 320-2, 322-1, and 324-1 for the adopted language and additional background information on items to amend Handbook 44 (HB 44) Scales Code paragraph S.2.1.1. General (Zero-Load Adjustment), ABWS Code paragraph S.2.1. Automatic Zero-Tracking (AZT) Mechanism, and AWS Code paragraph S.2.1.1. Automatic Zero-Tracking Mechanism. This item was originally proposed by a subgroup of the 2008 WS. However, at its 2009 Annual Meeting, the Sector reached a consensus among the attendees that an Automatic Zero-Setting Mechanism does not have any value, and at times will facilitate inaccurate weight determinations either against the buyer or seller. The NCWM considered the recommendations of the WS and additional comments at the NCWM Interim and Annual meetings, and agreed to amend Scales and Automatic Weighing System (AWS) codes to clarify that automatic zero adjustments beyond the AZT limits are not permitted. The WS also agreed with the amendment to the Automatic Bulk Weighing Systems (ABWS) code to clarify that an automatic zero-setting mechanism is prohibited. The NCWM adopted the WS recommendations to amend Scales Code

paragraph S.2.1.1., ABWS paragraph S.2.1., and AWS paragraphs S.2.1.1. in the 2011 Edition of HB 44. The NCWM also adopted a new definition of automatic zero-setting mechanism (AZSM) in HB 44 Appendix D, since the term is used in the ABWS code.

The background information may be obtained online at:

2009 WS – http://ncwm.net/sites/default/files/meetings/weighing/2009/09_Weighing_Summary.pdf
2010 S&T Interim Report – http://www.ncwm.net/sites/default/files/meetings/annual/2010/10_Pub_16_ST.pdf
2010 S&T Annual Report – http://www.nist.gov/pml/wmd/index.cfm

Discussion/Conclusion: The NIST Technical Advisor provided the Sector with specific recommendations for incorporating test procedures and checklist language into Publication 14 based upon actions of the 2010 Annual meeting of the 95th NCWM. The WS discussed each item and provided the following input regarding the technical aspect of the issues:

- Pub 14 DES 43. Zero-Tracking Mechanism: A question was raised by a member of the WS whether the Publication 14 would automatically change as the result of R 76 being amended, since the language recommended excluded the reference to a specific edition of R 76. The WS recommended that the year "2006" be added to specifically indicate that it is the language from that particular edition, and no other, that was being agreed upon by members of the WS. The WS also agreed to replace the words "a period of time" with "30 minutes" when it was pointed out that Canada had adopted 30 minutes as a standard and "a period of time" is too subjective.

- Pub 14 ABWS Section 8. The WS agreed to recommend that the new sentence proposed by the NIST Technical Advisor prohibiting AZSM be added.

- Pub 14 AWS Section 16. The WS agreed to recommend that the new sentenced proposed by the NIST Technical Advisor prohibiting an automatic zero adjustment beyond the limits of AZT be added. However, rather than adding the new sentence to Section 16 as proposed, the WS recommends that the sentence be added to Section 25.

- Pub 14 AWS Section 25. The WS discussed the need to include a specific period of time as a condition in which AZT may operate rather than "after a period of time" as proposed in language developed and recommended by the NIST Technical Advisor. The WS agreed to recommend "30 minutes" as the time period.

Additionally, the WS agreed to amend procedures proposed by the NIST Technical Advisor for verifying that a device does not automatically re-zero an amount greater than the limit of AZT. The procedures developed by the NIST Technical Advisor recommended the test be conducted by placing a load just above the limit of AZT. A WS member questioned the meaning of "just above the AZT limits," and the WS concluded that the procedures should indicate a specific amount of weight. The WS agreed to recommend that the procedure specify the test be conducted with a load 1 to 3 d above the limit of AZT. These recommendations can be found in Appendix A, Agenda Item 1.a.

1.b. T.N.4.5.3. Zero-Load Return.

Background: See the Final Report of the 2010 NCWM S&T Committee Agenda Item 320-3 for the adopted language and additional background information on the item to amend HB 44 Scales Code paragraphs T.N.4.5.1. Time Dependence, T.N.4.5.2. Time Dependence (III L), and add new paragraph T.N.4.5.3. Zero-Load Return (http://www.ncwm.net/sites/default/files/meetings/annual/2010/10_Pub_16_ST.pdf). The NCWM agreed to amend the existing paragraphs (T.N.4.5.1. and T.N.4.5.2.) by moving creep recovery tolerances and adding them in a new paragraph (T.N.4.5.3.), to align creep recovery tolerances on scales with the equivalent tolerances for load cells, which were adopted in 2009.

Discussion/Conclusion: The NIST Technical Advisor provided the Sector with specific recommendations for incorporating test procedures and checklist language into Publication 14 based upon actions of the 2010 Annual Meeting of the 95th NCWM. The WS reviewed the item and suggested the technical advisor review the applicable references for weighing segment and weighing range. The WS agreed to recommend the proposed changes to the time dependence test form with the editorial corrections noted above be added to Publication 14. The proposed changes can be found in Appendix A, Item 1b.

1.c. UR.2.6. Approaches

Background: See the Final Report of the 2010 NCWM S&T Committee Agenda Item 320-4 for additional background information on the item to amend HB 44 Scales Code paragraphs UR.2.6. Approaches.

Conclusion: The WS agreed with the NIST Technical Advisor recommendation that no changes to Publication 14 are needed.

2. HB 44, G-S.8. Provisions for Sealing Adjustable Components

Source: NCWM S&T Committee – 2009 WS Agenda Item 13.

Background: At its 2009 meeting, the WS reviewed the comments from the S&T Committee, the background information in the NCWM 2008 Annual and 2009 Interim Reports, and the summary of proposals provided by the NIST Technical Advisor. The WS believes that existing language in HB 44 is sufficient and that the sectors review existing type evaluation criteria to verify that devices shall be designed with:

1. provision(s) for applying a physical security seal that must be broken before any change that detrimentally affects the metrological integrity of the device can be made to any electronic mechanism; or

2. other approved means of providing security to document any change that detrimentally affects the metrological integrity of the device can be made to any electronic mechanism (e.g., data change audit trail) available at the time of inspection.

During the fall 2009 WWMA Technical Conference, Mr. Darrell Flocken, Mettler-Toledo, speaking as Chairman of the WS, reported the Sector's position as stated above, and noted that the Sector can develop additional guidance in NCWM Publication 14 to ensure uniform interpretation of the requirement during type evaluation.

At its October 2009 meeting, the National Type Evaluation Technical Committee (NTETC) Measuring Sector provided the Committee with the following comments:

The Sector stated that measuring devices with National Type Evaluation Program (NTEP) Certificate of Conformances (CCs) have been evaluated to either:

1) not function in the calibration or configuration mode;

2) not be sealed in the calibration or configuration mode; or

3) clearly indicate the device is in the calibration or configuration mode.

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

Additional information on the past S&T Committee discussion on the item can be found at:

- 2008 Final Report – http://ts.nist.gov/WeightsAndMeasures/Publications/SP1080.cfm
- 2009 Final Report – http://ts.nist.gov/WeightsAndMeasures/Publications/sp1099.cfm

- 2009 WS Summary – http://www.ncwm.net/sites/default/files/meetings/weighing/2009/09_Weighing_Summary.pdf
- 2010 Interim Report – http://ts.nist.gov/WeightsAndMeasures/Publications/10-Pub16.cfm
- 2010 Annual Report – http://www.nist.gov/pml/wmd/index.cfm)

Discussion: The WS reviewed the sealing procedures in Publication 14 Scales and compared them with Publication 14 for Liquid Measuring Devices, and also compared applicable HB 44 sealing requirements in the General, Scales, and Liquid Measuring Device (LMD) codes. A small WG was formed to develop more detailed procedures for determining compliance of the methods for sealing and requested the WS to consider its recommendations for Publication 14, DES Section 10. The WS reviewed the recommendations and was asked to determine whether the guidance in the WG recommendation ensures uniform interpretation of sealing requirements during type evaluation.

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

Conclusion: The WS agreed with the revised proposal to amend Publication 14 Section 10. This recommendation can be found in Appendix A, Agenda Item 2. The WS also agreed to forward the amended language for Publication 14 to the S&T Committee with a recommendation that the S&T item be withdrawn from the Committee's Agenda.

3. DES Section 66 (c) – Remove.

Source: Mr. Ed Luthy, formerly of Brechbuhler Scales – 2009 WS agenda item 15

Background: Mr. Luthy requested the WS to consider deleting DES Section 66 (c). Performance and Permanence Tests for "Side-by-Side" Modular and Non-Modular Vehicle Scales, stating that the time and expense is too large for the value added to having the option listed on an NTEP CC.

At its 2009 meeting, the WS stated that it is not in favor of removing the section. The purpose of the original proposal to delete DES Section 66(c) is intended to reduce the expense of type evaluation on these devices. The scale manufacturers in attendance volunteered to form a small work group (WG) to review the existing procedures and develop proposals to amend existing language for a possible abbreviated test procedure.

Discussion/Conclusion: The WS recommended this item be removed from the its Agenda upon learning from the NIST Technical Advisor that no activity had been reported by the small WG since the item was first introduced at the 2009 Annual WS meeting. Additionally, Mr. Luthy requested the item be removed since he no longer represents Brechbuhler.

New Items:

4. HB 44, Scales Code – T.N.4.7. Amend Creep Recovery Tolerances for III L Load Cells

Source: Mr. Kevin Fruechte, Avery Weigh-Tronix

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

Prior to 2009, the tolerance for Class III load cells was 0.5v. This was increased by a factor of 5/3 to arrive at the 0.83 v tolerance in the current requirement. This recommendation proposes to increase the existing 1.5 v tolerance for Class III L load cells by the same 5/3 factor. Thus the new tolerance would be 1.5 v x 5/3 or 2.5 v.

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

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

The Class III creep recovery tolerance is 0.83 v (0.83 v x 10 lb/v = 8.3 lb)
The Class III L creep recovery tolerance is 1.5 v (1.5 v x 5 lb/v = 7.5 lb)
The proposed Class III L creep recovery tolerance is 1.5 v v 5/3 = 2.5v (2.5 v x 5 lb/v = 12.5 lb)

Avery Weigh-Tronix also notes the increased cost involved with meeting Class III L VCAP (voluntary Conformity Assessment Program) requirements with a tolerance that is less than Class III. Multiplying the Class III L tolerance by 5/3, as was done with Class III, would be more cost effective for a load cell manufacturer.

Discussion/Conclusion: The NIST Technical Advisor to the WS provided the sector with a summary of creep recovery test results from October 1, 2007, through August 12, 2010, for Class III L load cells from the NIST Force Group that shows that Class III L load cell creep recovery type evaluation compliance rate is 76 % using existing tolerances (See Attachment for Agenda Item 4.). The compliance rate for Class III load cells over the same time period is 69 % using the expanded tolerance adopted in 2009. Mr. Fruechte, Avery Weigh-Tronix, explained to the WS the need to amend the creep recovery tolerances for Class III L load cells based on the example provided by the NIST Technical Advisor. A WS member stated that using the 5/3 factor would reconcile the differences between U.S. Class III L creep recovery tolerances with comparable International Organization of Legal Metrology (OIML) R 60 Class C load cell tolerances. The WS agreed to submit the language to amend paragraph T.N.4.7. to the S&T Committee and regional weights and measures associations as follows:

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

(a) 0.5 times the value of the load cell verification interval (0.5 v) for Class II and IIII load cells;

(b) 0.5 times the value of the load cell verification interval (0.5 v) for Class III load cells with 4000 or fewer divisions;

(c) 0.83 times the value of the load cell verification interval (0.83 v) for Class III load cells with more than 4000 divisions; or

(d) **2.5** ~~**1.5**~~ times the value of the load cell verification interval (**2.5** ~~**1.5**~~ v) for Class III L load cells.

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

5. DES Section 11 - Indicating and Recording Elements – Use of the Comma as a Decimal Marker.

Source: Mr. Steven Cook, NIST Weights and Measures Division (WMD)

Background: WMD has received a request for clarification about the use of commas as a decimal marker. There is no specific prohibition of the use of commas in HB 44 and Handbook 130 (HB 130). Additionally, Publication 14 DES section only uses periods or dots when decimals markers are used. However, Pub 14 Liquid-Measuring Devices Section 1.20., states that "Symbols for decimal points shall clearly identify the decimal position. (Generally acceptable symbols are dots, small commas, or x.)"

The use of the dot as the decimal marker is customary in the United States and WMD believes that the use of a comma is not appropriate for commercial applications. HB 44 references the words "decimal point" in the General Code. The "decimal point" is generally defined as a dot, point, or period and is based on the terminology having a general meaning found in several U.S. dictionaries. Additionally, the comma is not used universally in international marketplaces where it conflicts the customary usage of the country. WMD believes that there is general resistance to the use of the comma by U.S. consumers and regulatory officials based on concerns over potential misinterpretations of indications and printed representations of weight or volume on weighing and measuring devices. The "Forward" of Handbook includes language that recognizes potential issues with the use of the "comma" where it states that:

> ". . . a space has been inserted instead of commas in all numerical values greater than 9999 in this document, following a growing practice, originating in tabular work, to use spaces to separate large numbers into groups of three digits. This avoids conflict with the practice in many countries to use the comma as a decimal marker."

Additionally, our recollections are that other NTEP applicants were denied the use of the comma as a decimal marker before the administration of NTEP was transferred from NIST to the NCWM.

The following references to the use or prohibition of the commas as a decimal marker were used to develop the WMD response.

U.S. Government Printing Office Style Manual

> 12.27. Fractions (¼, ½, ¾, ⅜, ⅝, ⅞, $^{1}/_{2954}$) or full-sized figures with the shilling mark (1/4, 1/2954) may be used only when either is specifically requested. A comma should not be used in any part of a built-up fraction of four or more digits or in decimals. (See rule 12.9e.)
>
> 12.9. e. Use spaces to separate groups of three digits in a decimal fraction.
> (See rule 12.27.) 0.123 456 789; but 0.1234

Extract from NIST Tech Beat by Ms. Carol Hockert, November 2006

> The specification of the use of only the decimal comma in English language international standards has been a source of antagonism for native English speaking people developing and using international standards for decades. Building upon a recent General Conference on Weights and Measures (CGPM 2003) resolution endorsing the use of the point on the line as the decimal sign, NIST, through ANSI, the official U.S. representative body in ISO and IEC, has recently been successful in gaining the acceptance of using the decimal point instead of the decimal comma in new English language international standards. This change in policy by ISO and IEC reflects customary usage of native English speakers and eliminates the disparity in practice between ISO and IEC standards and English language documents of other international organizations.

Extract from the NIST Monthly Highlights February 2004

> 22nd CGPM Unanimously Adopts Decimal Marker Resolution
>
> The 22nd General Conference on Weights and Measures (CGPM), at its meeting in Paris on Oct. 13 - 17, 2003, unanimously adopted a resolution initiated by NIST declaring that "the symbol for the decimal marker shall be either the point on the line or the comma on the line," thereby giving full equality to the two symbols. In the same resolution, the 22nd CGPM reaffirmed that "Numbers may be divided in groups of three in order to facilitate reading; neither dots nor commas are ever inserted in the spaces between groups."
>
> In the International System of Units (SI), which is the modern metric system, values of quantities are normally expressed as a number times an SI unit. Often the number contains multiple digits with an integral part and a decimal part. The symbol that separates the integral part from the decimal part is called the decimal marker. The established custom in English, as well as in many other languages, is to use the point on the line as the decimal marker, while in other languages, including French, the comma is used.
>
> Despite these long-standing customs, some international bodies employ the comma as the decimal marker in their English language publications, and two of the world's most influential international standardizing bodies specify that the comma shall be the symbol for the decimal marker in all languages. Clearly, the specification of the comma as the decimal marker is in many languages in conflict with customary usage and could lead to much confusion if followed.
>
> To address this issue, the 22nd CGPM unanimously adopted the NIST-initiated resolution. NIST will now work with international standardizing bodies, such as ISO and IEC, to bring the documentary standards of such bodies into agreement with the resolution.

Discussion/Conclusion: The WS agreed that the use of the comma as a decimal marker instead of the point or dot would be confusing in the U.S. marketplace. It was noted by Mr. Luciano Burtini, Measurement Canada (MC) that it would not be confusing in the Canadian marketplace since the use of the decimal point or comma depended upon whether a person spoke English or French. The WS agreed to recommend that Publication 14 DES Section 11 Indicating and Recording Elements - General be amended as proposed by the NIST Technical Advisor, and that the decimal point would be used in United States/Canada mutual recognition type evaluations. This recommendation can be found in Appendix A, Agenda Item 5.

6. DES Section 42 - Zero-Load and Tare Adjustment - Rounding of Intermediate Values in an Equation.

Source: Mr. Steven Cook, NIST WMD

Background: Publication 14 DES Sections 42 - Zero-Load Adjustment – Monorail Scales currently reflects language in HB 44 regarding the setting of zero and tare value less than 5 % of the scale capacity to within 0.02 % of scale capacity according to HB 44 Scales Code paragraphs S.2.1.4 (Monorail Scales) and S.2.3.1.(Monorail Scales Equipped with Digital Indications). In other words, a 1000 lb x 1 lb monorail scale shall have the capability to set tare values up to 50 lb to within a resolution of 0.2 lb (1000 x 0.02 %).

However, there are no procedures in Section 42 to verify that a co rrect zero-load balance or semiautomatic, keyboard entered, or stored tares are not rounded to the nearest value of d (1 lb) before the net weight is calculated. In the above example, a tare that is rounded before the net weight calculation introduces an extra 0.5 lb uncertainty in the net weight. This can be a problem if an average tare value of 7.6 lb for a series of trolleys is entered as tare. Objects (animal carcasses) will be consistently short weighed if the tare is rounded from 7.6 lb to 8 lb before the net weight is calculated. This may present economic harm to sellers or producers of livestock that are paid based on the weights from the monorail scale. Conversely, average tare weights that are rounded down to the nearest displayed scale division may present economic harm to the buyers, typically processors, that pay the producers based on the weights from the monorail scale.

Another question is whether the net weights are determined using the digital indicator's internal or displayed resolution of the gross weight in the calculation of the net weight.

The following is additional background information supporting the correct rounding (and significant digits) of values in an equation:

NIST SP 811-Guide for the Use of the International System of Units (SI), Barry N. Taylor and Ambler Thompson (2008)

B.7.2 Rounding converted numerical values of quantities

The use of the factors given in Secs. B.8 and B.9 to convert values of quantities was demonstrated in Sec. B.3. In most cases the product of the unconverted numerical value and the factor will be a numerical value with a number of digits that exceeds the number of significant digits (see Sec. 7.9) of the unconverted numerical value. Proper conversion procedure requires rounding this converted numerical value to the number of significant digits that is consistent with the maximum possible rounding error of the unconverted numerical value.

Example: To express the value l = 36 ft in meters, use the factor 3.048 E−01 from Sec. B.8 or Sec. B.9 and write

l = 36 ft × 0.3048 m/ft = 10.9728 m = 11.0 m.

Rounding guidelines found on the Internet:

- In any math problem you should wait until the end to round; Only the final answer should be rounded. Carry as many significant digits as you can throughout the problem.
- Round Off Rule: Round only the final answer not the intermediate values that occur during the calculation. Carry at least twice as many decimal places as will be used in the final answer.
- Do the math, then round the answer so that the number of significant figures is equal to the least number of significant figures found in any one measurement in the equation.

Discussion: WMD asked the sector to consider the following suggestions to address the specific issues of correctly rounding values in the calculation of net weight determinations on monorail scales, develops test procedures, and support a general guideline in the rules for rounding in HB 44.

Part 1 Technical Advisor Recommendation: WMD requested that the WS consider adding language to DES 42 that clarifies that rounding is not performed until the last mathematical operation is completed to read as follows (Note that the language is consistent with the rounding requirements in DES Section 12.3.2.3. for converting units of measure):

42. Zero-Load and Tare Adjustment - Monorail Scales
Code References: S.2.1.4. and S.2.3.1.

Under the regulations of the Packers and Stockyards Administration, the rollers and hooks used on monorail scales within a facility are required to be nearly the same weight. Since monorail scales typically have scale divisions of 1 lb, a monorail scale must be capable of setting tare weights that are less than 5 % of the scale capacity to a weight value less than the displayed scale division. This reduces the rounding error in the tare weight that would otherwise be present if the tare weight were rounded to the nearest displayed scale division.

42.1. Means must be provided for setting the zero-load balance and any tare value less than 5 % of the scale capacity to within 0.02 % of scale capacity. Yes ☐ No ☐ N/A ☐

42.2. For an in-motion system, the conditions above must be automatically maintained. Yes ☐ No ☐ N/A ☐

42.3. Rounding is not performed until the last mathematical operation to reduce the uncertainty of the net weight calculation. **Yes ☐ No ☐ N/A ☐**

Part 1 Conclusion: The WS agreed to recommend that Publication 14 Section 42 be amended to clarify rounding procedures for monorail scales. This recommendation can also be found in Appendix A, Agenda Item 6.

Part 2 Technical Advisor Recommendation: WMD believes that that compliance with HB 44 paragraphs S.2.1.4. (Monorail Scales) and S.2.3.1. (Monorail Scales Equipped with Digital Indications) should be verified with documented and agreed upon test procedures. The NIST Technical Advisor suggests that a small WG be formed that includes a member representing manufacturers of monorail scale digital indicating elements, and a representative from Grain Inspection Packers and Stockyards Administration (GIPSA). The group may also want to address the appropriate method of calculating net weight using the digital indicator's internal or displayed resolution of the gross weight.

***Part 2 Conclusion*:** The WS agreed to form a small WG to develop test procedures for verifying correct rounding of net weight determinations on monorail scales. Mr. Cook and Mr. Truex will contact holders of monorail NTEP CCs and request their involvement. GIPSA will be consulted on any recommendations from the WG.

Part 3 Technical Advisor Recommendation: Submit or support a recommendation to the S&T Committee to amend Appendix A-Fundamental Considerations, Section 10. Rounding Off Numerical Values to state that intermediate values that occur during a calculation shall not be rounded. If intermediate values are to be rounded they should only be rounded so that the number of significant figures is equal to the least number of significant figures found in any one measurement or value in the equation.

Part 3 Conclusion: Mr. Cook, NIST Technical Advisor, stated that the proposal to develop language for HB 44 is not sufficiently developed. Therefore, the WS agreed to take no action at this time.

7. HB 44 -2.10. T.N.4.5.1. Creep and Creep Recovery Requirements for Class III Scales with n > 4000 divisions.

Source: Mr. Nigel Mills, Hobart

Background: During the 2010 Annual Conference, the NCWM voted to amend the language in T.N.4.5. as shown in agenda item 2(b). Hobart reports that the recent change to scale tolerances for time dependence in HB 44 are still not consistent with the intent to harmonize load cell and scale performance. In 2009, the WS addressed creep recovery on return to zero but there is still an extremely tight 0.5e (Scales Code paragraph T.N.4.5.1. (a)) requirement, which makes the recent changes to the scale zero return specification of minimal value since the amount of creep at capacity is related to a load cells ability to return to zero.

According to paragraph T.N.4.5.1. Time Dependence: Class II, III, and IIII Non-automatic Weighing Instruments: the change in the near capacity indication after 30 minutes for a complete device may not exceed 0.5e, while the load cell of the same rated increments is permitted a maximum permissible error (mpe) of 1.5e or even 2.5e.

Hobart proposed that the WS submit a proposal to the S&T Committee amending the language in bullet (a) of the 2011 HB 44 Scales Code Paragraph T.N.4.5.1. to provide specific tolerances for time dependence for the different accuracy classes of scales and maximum number of divisions.

Discussion/Conclusions: The WS agreed with the intent of the proposal and asked that Mr. Cook and Mr. Mills verify the time references in the proposal, and agreed to submit the following language to the NCWM S&T Committee and regional weights and measures associations as a proposal to amend HB 44 Scales Code paragraph T.N.4.5.1.(a) for by the NCWM during the 2011 NCWM Interim Meeting.

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

(i) 0.5 e for Class II and IIII devices;

(ii) 0.5 e for Class III devices with 4000 or fewer divisions; and

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

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

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

If the conditions in (a) are not met, the difference between the indication obtained immediately after the load **is applied to** the instrument and the indication observed during the following 4 hours shall not exceed the absolute value of the maximum permissable error at the load applied.

NIST Technical Advisor's Note. Mr. Mills, Mr. Darrell Flocken, and Mr. Cook submitted the NCWM Form 15 Proposal to Amend Handbooks to Central Weights and Measures Association (CWMA), Western Weights and Measures Association (WWMA), Southern Weights and Measures Association (SWMA), and Northeastern Weights and Measures Association (NEWMA) in time for their fall meetings, and to the NCWM.

8. NTEP Policy Clarification on Adding a CIM Controller to a Static RR Track Scale.

Source: Mr. Lou Straub, Fairbanks Scales, Inc.

Background: Fairbanks Scales was asked by a customer to add a Coupled-in-Motion (CIM) controller to a Static Railroad Track Scale. Both the scale and the CIM controller have current NTEP CCs. The State where the device was located would not approve this application because the static Railroad Track scale was not evaluated with the CIM controller. The State took the position that any static Railroad Track scale used with a CIM controller must be evaluated for in-motion weighing and this application must be included on an NTEP CC.

Fairbanks Scales believes that the state's perspective concerning a static weighbridge receiving NTEP approval for in-motion weighing is legitimate. However; after searching the NTEP database they could not find any railway weighbridges approved for in-motion weighing. The only two CCs addressing this issue are for the controller - and both (96-141 and 06-061) used a NTEP approved static weighbridge.

This item has been addressed in previous Weighing Sector Meetings; however, the published comments in the NTEP Weighing Sector Summaries, the changes made to NCWM Pub 14, or information supplied by the NTEP Administrator and NIST would not change the decision of the State.

The submitter reports that after discussing this issue with the NTEP Administrator and NIST Technical Advisor to the Weighing Sector, he believes the following bullets reflect the actions of the 2007 WS:

- The 2010 Edition of Pub 14 Section 70 only applies to the controllers, indicators and recording elements.
- Pub 14 Section 70 states that the in-motion controller performance tests are to be conducted with a railway track scale load-receiving element and without the use of simulation devices.
- Pub 14 Section 70 also states "It is assumed that the weighing/load-receiving element used during the test has already been examined and found to comply with applicable requirements in Section 71 (Performance and Permanence Tests for Railway Track Scales Used to Weigh Statically)."

- The permanence test requirement was removed (starting with in the 2008 Edition of Publication 14).

- There is no section in Pub 14 for "Permanence and Performance Tests for Railway Track Scales Used to Weigh Dynamically (in-motion)".

- Fairbanks Scales was unable to find any "stand-alone" CCs for in-motion railway track scale weighing/load-receiving elements.

The submitter asked the WS to review this issue and provide clarification that will be considered acceptable to all the states participating in NTEP. The submitter provided the following possible solutions:

1. Require NTEP CCs for CIM controllers be clarified to reflect the decisions of the 2007 Weighing Sector which specifically allow any NTEP approved static Railroad Track scale to be used with an NTEP approved CIM controller, or

2. Add permissive language to NIST HB 44

Discussion: Mr. Lou Straub, Fairbanks Scales, indicated that in spite of NTEP Technical Policy to the contrary, the particular state referenced above would only permit one manufacturer to sell a CIM in that state, since NTEP CCs do not state that a CIM system can be used with other compatible and NTEP certified static railway track scales.

Mr. Truex commented that it is a state's right to fix the policy for the state and added that there are no CCs for railway track CIM weighing element. Darrell Flocken suggested amending existing railway track scale CCs by removing the words "static."

Conclusion: The WS recommends that the NTEP Committee consider editorially amending existing active CCs for railway track scale weighing/load-receiving elements by removing the word "static" since static railway track scales are allowed to be used for in-motion weighing applications (e.g., "Application: For general purpose railway track scale weighing applications.").

9. ECRS Section 8 - Power Failure

Source: NTEP Weighing Labs

Background: During the March 2010 NTEP Lab Meeting, held in Sacramento, California, the Weighing Labs were asked by Mr. Steve Patoray, (Weighing Labs Agenda Item 2) to explain how Section 8, paragraph 8.7.3. of Pub 14, ECRS could be met. The labs agreed that this item be forwarded to the WS for review and possible development of appropriate test criteria. The following is a copy of the 2010 Weighing Labs Agenda Item 2:

Weighing Labs Item 2 – ECRS Power Failure

Source: Steve Patoray
Section 8 in ECRS has info on power loss for the ECRS.

Mr. Patoray asks how 8.7.3. can be met from what is stated in the Note below this section? Parts 1 and 2 of 8.7. are fairly clear, but in part 3, how does the ECR "continue to function and perform correctly" if it prevents indication or continuation of any transaction.

If part 3 is acceptable, what must occur after the card has been read in a card-activated system when the power has been restored? Some questions are:

- Does step 3 apply to such a system?
- Could the transaction be "canceled" in case of a power loss?
- No charges?

- Then the POS returns to normal operation, (with no transaction) once power is restored?

8.7. Power Interruptions. If a power interruption occurs via the switch, plug, or line fluctuation, the register must do one of the following:

8.7.1.	Continue to function and perform correctly (e.g., the ECR is equipped with an uninterruptible power supply).	Yes	No	N/A
8.7.2.	Cease operation when power is interrupted and resume the transaction in process, at the time of the power failure when power is returned.	Yes	No	N/A
8.7.3.	Prevent any indication or the continuation of any transaction initiated before a power interruption.	Yes	No	N/A

***NOTE**: Either alternative is acceptable provided that the ECR continues to function and perform correctly. There are no requirements to indicate when a power failure or interruption has occurred. Test first with a power failure to the ECR alone, then power failure to the scale alone and finally by power failure to both components simultaneously.*

Also, the sentence underlined below, does not seem to fit with 8.7.3. either.

8. Indicating and Recording Elements – General

Code Reference: G-S.5.1., G-S.2., S.1.1. and S.1.12.

A point-of-sale system (POS) shall be designed to provide clear, definite, and adequate indications.

- Its features and operations shall be designed so that they minimize the potential of both intentional and unintentional errors.
- The price-look-up (PLU) capability shall prevent the interaction of weight and nonweight PLUs, (e.g., weight-related PLUs must require a weight input and nonweight PLUs shall not respond to weight input).
- Manual gross or net weight entries are permitted only under specific conditions and shall be identified on the printed ticket or receipt. Manual, stored, or other predetermined tare entries do not have to be identified.
- Transaction information shall not be lost or unrecorded in the event of a power failure.

It would seem that with this criteria that every ECR/POS would need to have some type of battery back-up or UPS (for the 15 minute requirement) to continue with the transaction. Is this correct?

Recommendation/Conclusion: The WS reviewed existing test criteria in Section 8.7. and recommended changing Publication 14 to clarify how an ECR is to perform when power is restored after a power interruption. This recommendation can be found in Appendix A, Agenda Item 9.

10. Acceptable Symbols/Abbreviations to Display the CC Number via a Device's User Interface.

Sources: 2009 NTETC Software Sector Agenda Item 3 and 2010 S&T Item 310-3 G-S.1. Identification. (Software)

2010 Interim Report of the S&T Committee:
(http://ts.nist.gov/WeightsAndMeasures/Publications/10-Pub16.cfm)

2010 Software Sector summary:
(http://ncwm.net/sites/default/files/meetings/software/2010/10_Software_Summary.pdf)

Background: Local Weights and Measures inspectors need a means to determine whether equipment discovered in the field has been evaluated by NTEP. If so, the inspector needs to know at a minimum the CC number. From this

starting point, other required information can be ascertained. HB 44 currently includes three options for marking of the CC:

1. Permanent marking;

2. Continuous display; or

3. Recall using a special operation.

Makers of Purpose-built (known internationally as "Type P") equipment often choose permanent marking. For Type Approved software executing on a U niversal computer (internationally known as "Type U"), permanent marking is not very practical. The second option of continuous display is also undesirable, as the permanent display occupies valuable operator/customer screen area. As a result, most makers of software for Type U equipment opt for the special recall option. Unfortunately, HB 44 is somewhat vague about the specific means of recall. Software makers can be quite creative leaving the field inspector guesswork, frustration, and wasted time. If the inspector complains, the maker notes that the recall procedure is documented in the CC. But this is precisely the information that cannot be retrieved in the field, leading to a circular argument.

Compounding the problem, makers of sophisticated built-for-purpose equipment would also like the same flexibility currently afforded to makers of software for Type U equipment. The recall method is not available to the Type P maker today.

At its March 2010meeting, the Software Sector, in response to comments heard during the 2010 Interim meeting, revised the proposed language changes described in the NCWM S&T Committee's Interim Report Item 310-3. These revisions removed the differentiation between types of software (Type P and Type U) while still managing to achieve the Sector's objective. The revised Item 310-3 proposal can be seen in the 2010 Software Sector Summary and is not included here for the sake of brevity.

In summary, for S&T Item 310-3 the Sector now suggests amending the current item under consideration. The Software Sector also initiated discussion on two new concepts, which may eventually result in additional recommendations to amend G-S.1. It should be noted that these new ideas are in the developmental stage, and are included here by request of the Sector, since comments from the regions and other interested parties would be appreciated by the Software Sector members.

First, the sector sees merit to requiring some "connection" between the software identifier (i.e., version/revision) and the software itself. The proposal was as follows (with the expectation that examples of acceptable means of implementing such a link would be included in Pub 14).

Add a new sub-subparagraph *(3)* to G-S.1.*(d)* to read as follows:

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

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

Discussion: The WS was requested to provide feedback on a brief initial list of menu text and icons intended to form a starting point for developing a complete list of acceptable options for accessing the required CC Number (if it is not hard-marked or continuously displayed) relating to the proposed G-S.1.1. subparagraph (b) and possible compromise solution as follows:

Proposed G-S.1.1.subparagraph (b):

(b) The CC Number shall be:

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

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

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

The software sector noted they are not suggesting the items in *(i)* and *(ii)* of the subparagraph be the final valid options and desired to have feedback specifically on additional menu text/icon images that should be considered acceptable. The software sector also noted that the number of acceptable options is less of an issue (within reason) than the fact that the list is finite.

A Possible Compromise Solution:

The Software Sector is asking if the restrictions for marking Type P equipment (allow the same options as for Type U) be relaxed in exchange for limiting the number of optional means for recalling the CC number when a recall sequence is required.

The proposed limitations on CC recall sequence are:

1. Recall shall not require more than two levels of operations. The CC recall method (trigger, command, etc.) may be present either on the main screen or one sub-menu/sub-screen down.

2. A limited number of menu text strings or icon shape choices are permitted for both the CC recall methods and the optional top level. (There is actually some validity to the argument this requirement is currently already implied by the term 'readily identifiable menu' used in HB 44 to describe the allowable means of recalling the CC.)

Of course, to affect this compromise a finite list of acceptable menu text/button icon options will have to be agreed upon and documented. Note that the states didn't express much concern about the actual number of allowable selections included (though it should be reasonable); they are more concerned that there is simply a finite list of options which the NTEP labs can reference to validate the device's implementation and that using that same list inspectors can locate the required information in the field.

Thus, the Software Sector developed the following brief initial list of ideas of menu text and icons which would form the starting point to developing the complete list of acceptable options for the readily identifiable menu.

Comments and additional suggestions for entries in the list are welcome.

Permitted Menu Text examples	***Permitted Icon shape examples***	***Essential characteristics***
Information Info		Top level menu text or icon • Icon text is a lower case "i" with block serifs • Text color may be light or dark but must contrast with the background color • Icon may have a circular border • Activation of this menu text/icon may invoke a second level menu text/icon that recalls metrology information.
Help **?**		Top level menu text or icon • Icon text is a question mark • Text color may be light or dark but must contrast with the background color • Icon may have a circular border • Activation of this menu text/icon may invoke a second level menu text/icon that recalls metrology information.
Metrology Metrological Information		Top or second level menu text or icon • Icon text is an upper case "M" • Text color may be light or dark but must contrast with the background color • Icon may have a rectangle or rounded rectangle border • If present, the activation of this menu text/icon must recall at a minimum the NTEP CC number. Other metrology information may optionally be displayed.
SI S.I.		Top or second level menu text or icon • Icon text is upper case "SI" • Text color may be light or dark but must contrast with the background color • Icon may have a rectangle or rounded rectangle border • If present, the activation of this menu item/icon must recall at a minimum the NTEP CC number. Other metrology information may optionally be displayed.
NTEP Data N.T.E.P. Certificate		This one is debatable – what if the certificate is revoked? Does NTEP grant holders of CCs the right to display the logo on the device, or just in documentation?

Acceptable examples:

1. The "M" icon is available on the home screen. Activation displays a new screen containing the CC number and some additional metrology information including the software version/revision number(s).

2. The "SI" icon is available on the home screen. Touch screen activation displays a pop-up containing the CC number. Releasing the icon erases the pop-up.

3. The main screen contains the "i" icon (information). Activating this icon displays a screen of other icons including the "M" icon. Activating the "M" icon displays the NTEP CC.

4. The main menu includes a "Help" selection which in turn contains a "Metrology" selection. Activation of the Metrology selection displays a pop-up screen containing all global metrological approvals, including the NTEP CC number. The user manually dismisses the pop-up screen by pressing the [X] button.

5. The main menu includes an "Info" selection which in turn contains a "SI" selection. Activation of the SI selection displays a pop-up screen containing all global metrological approvals, including the NTEP CC number. The user manually dismisses the pop-up screen by pressing the [OK] button.

Conclusion: The WS reviewed the initial list of menu text and icons and provided the following comments:

- Mr. Flocken indicated that the green M is an EU metrology mark and for that reason should not be considered an acceptable icon.

- There was general consensus amongst WS members that the SI should not be considered acceptable since it is also used to identify the International System of Units.

Next Sector Meeting:

Conclusion: The WS agreed to recommend that its annual meeting be held during the last week of August 2011 in Sacramento, California. The WS suggested Denver, Colorado, as an alternate location.

Appendix A - Recommendations for Amendments to Publication 14

Agenda Item 1.a.

DES Section 40. Zero-Load Adjustment - General
Code References: S.2.1.1. and S.2.1.2.

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Indicate the zero load adjustment method provided.

- ☐ Tool operated zero-load adjustment. (Manual zero-setting mechanism)
- ☐ Semi-automatic zero-load adjustment. (Semi-automatic zero-setting mechanism)
- ☐ Power switch zero-load adjustment.
- ☐ **Initial zero setting mechanism.(editorial)**

DES 43. Zero-Tracking Mechanism
Code Reference: S.2.1.3., S.2.1.3.1., S.2.1.3.2., and S.2.1.3.3.

A scale may be equipped with an automatic zero-tracking mechanism (AZT) capability to automatically correct for weight variations near zero within specified limits. To reduce the potential for weighing errors, the AZT may operate only under limited conditions as indicated in the specific type evaluation criteria. **Automatic zero-setting (setting the scale to zero without the intervention of the operator after 30 minutes) beyond the limits of AZT as defined in OIML R76 (Edition 2006) as an zero-setting mechanism is not permitted in HB 44 since there is no limit on the amount of zero adjustment in HB 44. Note that automatic zero setting is not the same as the initial zero-setting mechanism.**

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43.1.	This amount must comply with S.2.1.3. for the intended application.	Yes ☐ No ☐ N/A ☐
43.2.	AZT shall not be operable on any hopper scale.	Yes ☐ No ☐ N/A ☐
43.3.	For vehicle, axle-load, and railway track scales, and scales other than bench, counter, and livestock scales AZT may be operable only at a gross load zero.	Yes ☐ No ☐ N/A ☐
43.4.	AZT shall not be operational when the scale is displaying a positive weight value greater than the maximum AZT quantity allowed.	Yes ☐ No ☐ N/A ☐
43.5.	Hopper scales used in automatic bulk-weighing systems and all Class III L scales shall be equipped with a sealable means to enable/disable or set the AZT window to zero (0) for testing and inspection.	Yes ☐ No ☐ N/A ☐
43.6	**Review documentation to verify whether the device has an automatic zero-setting mechanism. If yes, the feature shall be configured in the disabled position. This feature shall also be protected by the approved security mean in Pub 14 Section 10.** **If there is no reference to automatic zero-setting in the documentation, verify that the device does not automatically rezero an amount greater than the limits of AZT.** **1) Place a load of 1 to 3 d above the limits of AZT. After 30-minutes, observe the device to see if the indication automatically returned to a zero indication.** **2) Place a load of 1 to 3 d above the limits of AZT. Zero the scale using the semiautomatic zero-setting mechanism. Remove the**	**Yes ☐ No ☐ N/A ☐**

test load. T he device should maintain a n egative weight indication or an error message or code that it is below zero. After 30-minutes, observe the device to see if the indication automatically returned to a zero indication.

The device does not comply if the indication automatically returns to zero.

ABWS Section 8
Code Reference: S.2.1., S.2.1.1., S.2.1.2.

The weighing system shall be equipped with manual or semiautomatic means by which the zero-balance or no-load reference value may be adjusted. An automatic zero setting mechanism **(AZSM) and an automatic zero tracking (AZT) mechanism as defined in Appendix D of HB 44 are** ~~is~~ prohibited.

AWS Section 25. Automatic Zero-~~Setting~~ Tracking Mechanism ~~(Zero Tracking)~~ (AZT)
Code Reference: S.2.1.1.

A scale may be equipped with an AZT capability to automatically correct for weight variations near zero within specified limits. To reduce the potential for weighing errors, the AZT may operate only under limited conditions. **Automatic zero-setting (setting the scale to zero without the intervention of the operator after 30 minutes) the limits of AZT as defined in HB 44 for the intended application is prohibited. Note that automatic zero setting is not the same as an initial zero-setting mechanism. An automatic zero adjustment beyond the limits of automatic zero-tracking (AZT), as defined in HB 44, is prohibited.**

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If the device has an AZT capability, record the maximum amount (in scale divisions) that can be zeroed at one time.

AVOIRDUPOIS: d
METRIC: d
OTHER UNITS: Specify unit ; d

25.1.	This amount must comply with S.2.1.3. **(Scales Code)** for the intended application. For devices falling under S.2.1.3. (a), that is, bench or c unter, AZT ma be operable with the device at a g oss load zero at a net load zero or at a negative net weight indication resulting from a tare weight entry having been made with the scale at zero gross load. Indicate where AZT is operational.	Yes ☐ No ☐ N/A ☐
	Gross Zero	Yes ☐ No ☐ N/A ☐
	Net Zero	Yes ☐ No ☐ N/A ☐
	Negative with Tare	Yes ☐ No ☐ N/A ☐
25.2.	AZT shall not be operational when the scale is displaying a positive weight value greater than the maximum AZT quantity allowed.	Yes ☐ No ☐ N/A ☐

25.3	**Review documentation to determine if the device has an automatic zero-setting mechanism. If yes, the feature shall be configured in the disabled position. This feature shall also be protected by the approved security mean in Pub 14 Section 8.** **If there is no reference to automatic zero-setting in the documentation, verify that the device does not automatically rezero an amount greater than the limits of AZT.** **1) Place a load of 1 to 3 d above the limits of AZT. After 30-minutes, observe the device to see if the indication automatically returned to a zero indication.** **2) Place a load of 1 to 3 d above the limits of AZT. Zero the scale using the semiautomatic zero-setting mechanism. Remove the test load. The device should maintain a negative weight indication or an error message or code that it is below zero. After 30-minutes, observe the device to see if the indication automatically returned to a zero indication.** **The device does not comply if the indication automatically returns to zero.**	**Yes ☐ No ☐ N/A ☐**

Agenda Item 1.b.

TIME DEPENDENCE TEST FORM

Code Reference: T.N.4.5.1., **and T.N.4.5.3.**

Control No.: _____
Pattern designation: _____
Date: _____
Observer: _____
Verification scale interval e: _____:
Resolution during test (smaller than e): _____:

	At start	At max	At end	
Temp:				°C
Rel. h:				%
Time:				
Bar. Pres:				hPa

(Only Class I)

Zero-tracking device is:

☐ Non-existent ☐ Not in operation ☐ Out of working range

$E = I + 0.5\ e - \Delta L - L$

Load L	Time of Reading	Indication I	Add. Load Δ L	Error	mpe
	Initial + 20 sec				
	5 min				
	15 min				
	30 min				
If the difference between the indication obtained at 15 minutes and that at 30 minutes exceeds 0.2 e, the difference between the indication obtained immediately after placing the load on the instrument and the indication observed during the following four hours shall not exceed the absolute value of the maximum permissible error at the load applied.					
	1 hr				
	2 hr				
	3 hr				
	4 hr				

15 - 30 min	☐ Passed	☐ Failed	
0 - 30 min	☐ Passed	☐ Failed	
0 – 4 hr	☐ Passed	☐ Failed	☐ Not Applicable

Time Dependence Zero Return

Zero-tracking device is:

☐ Non-existent ☐ Not in operation ☐ Out of working range

$P = I + 0.5\ e - \Delta L$

Time of Reading	Load L_0	Indication of zero I_0	Add. load Δ L	P
After loading for 30 minutes Load = _____				
Change of indication Δ P = _____				

Meaning of symbols:
I = Indication

For single range scales: Check that $\|\Delta P\| \leq \|MPE\|$ for Class III L devices Check that $\|\Delta P\| \leq 0.5$ e for Class II~~, III,~~ and IIII devices **Check that $\|\Delta P\| \leq$ 0.5 e for Class III devices (n ≤ 4000 d)** **Check that $\|\Delta P\| \leq$ 0.83 e for Class III devices (n > 4000 d)** **For multi-interval scales:** **Check that $\|\Delta P\| \leq$ 0.83 e of the first weighing segment of the scale** **For multiple range scales:** **Check that $\|\Delta P\| \leq$ 0.83 e (interval of the weighing range under test)** **Check that after returning to zero from any load greater than Max_1 and immediately after switching to the lowest weighing range, the indication near zero shall not vary by more than e_1 during the next 5 minutes.** ☐ Passed ☐ Failed Remarks:	I_0 = Indication of no-load reference at the start of the test L = Load L_0 = Mass of no-load reference at the start of the test Add. load Δ L = Additional load to next changeover point P = Digital indication prior to rounding = I + 1/2 e - Δ L E = Error = I - L or P – L **e_1 = interval of the first weighing range or segment** **Max_1 = capacity of the first weighing range or segment** mpe = Maximum permissible error EUT = Equipment under test

Agenda Item 2.

10. Provision For Metrological Sealing of Adjustable Components or Audit Trail

Code References: G-S.8.1. and S.1.11.
Due to the ease of adjusting the accuracy of electronic scales, all scales (except for Class I scales) must provide for a security seal that must be broken or provide an audit trail, before any adjustment that detrimentally affects the performance of the electronic device can be made. Only metrological parameters that can affect the measurement features that have a significant potential for fraud and features or parameters whose range extends beyond that appropriate for device compliance with NIST HB 44 or the suitability of equipment, shall be sealed.

For additional information on the proper design and operation of the different forms of audit trail, see *Appendix B for the Requirements for Metrological Audit Trails.*

The judgment of whether or not the method of access to an adjustment represents a "significant potential for fraud" and will normally require sealing for security will be made based upon the application of the *Philosophy for Sealing in Appendix A*.

Sealing - General

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

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

Technologist:
Project number:

Applicable for Devices Using a Physical Seal

		Remarks:
Date		
Time		
Temp ºC		
RH (%)		

Mechanism used to enter calibration / configuration

Jumper	Pushbutton (momentary switch)	Toggle / Slide Switch	Other (Describe in Remarks)	Meets requirements
Yes☐ No ☐ N/A ☐	Yes☐ No ☐ N/A ☐	Yes☐ No ☐ N/A ☐	Yes☐ No ☐ N/A ☐	Yes☐ No ☐ N/A ☐

Mechanism effective upon exit of calibration / configuration in Approved Mode, when mechanism is properly set according to manufacturer's specifications.

Jumper	Pushbutton (momentary switch)	Toggle / Slide Switch	Other (Describe in Remarks)	Meets requirements
Yes☐ No ☐ N/A ☐	Yes☐ No ☐ N/A ☐	Yes☐ No ☐ N/A ☐	Yes☐ No ☐ N/A ☐	Yes☐ No ☐ N/A ☐

(**Note:** entering and exiting the calibration/configuration access mode shall be listed on the NTEP CC.)

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

Audit Trails – General

10.1. Verify that… **(The remainder of Section 10 is unchanged.)**

Agenda Item 5.

11. Indicating and Recording Elements - General
Code References: G-S.2., G-S.5.1., G-S.5.2.2., and S.1.2.

There are several general requirements to facilitate the reading and interpretation of displayed weight values. Other requirements address the proper operation of indicating and recording elements. **The use of the dot as the decimal marker is customary in the U.S. and that the use of other types of decimal markers (e.g., comma or "·") is not acceptable.**

Agenda Item 6.

42. Zero-Load and Tare Adjustment - Monorail Scales
Code References: S.2.1.4. and S.2.3.1.

Under the regulations of the Packers and Stockyards Administration, the rollers and hooks used on monorail scales within a facility are required to be nearly the same weight. Since monorail scales typically have scale divisions of 1 lb, a monorail scale must be capable of setting tare weights that are less than 5 percent of the scale capacity to a weight value less than the displayed scale division. This reduces the rounding error in the tare weight that would otherwise be present if the tare weight were rounded to the nearest displayed scale division.

42.1. Means must be provided for setting the zero-load balance and any tare value less than 5 percent of the scale capacity to within 0.02 percent of scale capacity. Yes ☐ No ☐ N/A ☐

42.2. For an in-motion system, the conditions above must be automatically maintained. Yes ☐ No ☐ N/A ☐

42.3. Rounding is not performed until the last mathematical operation to reduce the uncertainty of the net weight calculation. **Yes ☐ No ☐ N/A ☐**

Agenda Item 9

8.7. Power Interruptions: If a power interruption occurs via the switch, plug, or line fluctuation, the register must do one of the following:

8.7.1. Continue to function and perform correctly (e.g., the ECR is equipped with an uninterruptible power supply.)**;** Yes ☐ No ☐ N/A ☐

8.7.2. Cease operation when power is interrupted and resume the transaction in process, at the time of the power failure when power is returned**; or** Yes ☐ No ☐ N/A ☐

8.7.3. Prevent any indication or the continuation of any transaction initiated before a power interruption **when power is returned**. Yes ☐ No ☐ N/A ☐

Note: ~~***Either alternative is acceptable provided that the ECR continues to function and perform correctly.***~~ *There are no requirements to indicate when a power failure or interruption has occurred. Test first with a power failure to the ECR alone, then power failure to the scale alone, and finally by power failure to both components simultaneously.*

Appendix B - List of Attendees

National Conference on Weights and Measures / National Type Evaluation Program

Weighing Sector Final Attendee List

August 31, 2010 – September 2, 2010 / Columbus, Ohio

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Attachments

Agenda Item 4. T.N.4.7. Amend Creep Recovery Tolerances for III L Load Cells

Creep Recovery history and tolerance scenario					
NIST tests 10/1/2007 - 8/12/2010					
Class III L					
capacity	classification	delay time (seconds)	measured recovery (v)	outcome for tolerance of 1.50v	also listed for Class III
30 t	III L Mult 10000	50	0.90	pass	
30 t	III L Mult 10000	50	0.80	pass	
75 klb	III L Mult 10000	50	1.01	pass	
75 klb	III L Mult 10000	50	0.60	pass	
50 klb	III L Mult 10000	50	2.20		
50 klb	III L Mult 10000	50	1.60		
60 klb	III L Mult 10000	50	1.55		*
75 klb	III L Mult 10000	50	1.12	pass	
75 klb	III L Mult 10000	50	1.68		
2000 kg	III L Mult 10000	40	0.64	pass	*
2000 kg	III L Mult 10000	40	0.56	pass	*
60 klb	III L Mult 10000	50	1.41	pass	*
60 klb	III L Mult 10000	50	1.49	pass	*
65 klb	III L Mult 10000	50	1.33	pass	*
75 klb	III L Mult 10000	50	1.38	pass	
100 klb	III L Mult 10000	50	0.62	pass	*
30 t	III L Mult 10000	50	0.61	pass	*
		percent passing ==>		76%	
Note 1: actual time for NIST unloading is on the order of 1 second, regardless of capacity					
Note 2: "delay time" means the time between initiation of unloading and taking the first (reference) reading					
Note 3: prior to 2009, recovery values for "delay times" of 30 or 50 seconds were interpolated from measured readings at nearby points					
Note 4: since 1/1/2009, NIST sampling begins with a reading at the "delay time" required by the new Pub.14 Table 5					

Creep Recovery history and tolerance scenario				
NIST tests 10/1/2007 - 8/12/2010				
Class III				
capacity	classification	delay time (seconds)	measured recovery (v)	outcome for tolerance of 0.83v
4 klb	III Mult 5000	40	1.09	
4 klb	III Mult 5000	40	0.95	
1000 kg	III Mult 5000	30	0.59	pass
1000 kg	III Mult 5000	30	0.82	pass
5 klb	III Mult 5000	40	1.56	
5 klb	III Mult 5000	40	0.17	pass
2000 kg	III Sing 5000	40	0.39	pass
2000 kg	III Sing 5000	40	0.16	pass
5 klb	III Sing 5000	40	1.72	
1000 kg	III Sing 5000	30	0.96	
200 lb	III Sing 5000	20	1.51	
1000 kg	III Mult 5000	30	0.48	pass
5 klb	III Mult 5000	40	0.60	pass
5 klb	III Mult 5000	40	0.39	pass
10 klb	III Mult 5000	40	0.66	pass
4 klb	III Mult 5000	40	0.75	pass
4.4 klb	III Mult 5000	40	0.42	pass
10 klb	III Mult 5000	40	1.22	
5 klb	III Sing 5000	40	1.03	
4 klb	III Mult 5000	40	0.28	pass
10 klb	III Mult 5000	40	0.93	
10 klb	III Mult 5000	40	1.25	
10 klb	III Mult 5000	40	0.93	
60 klb	III Mult 5000	50	0.77	pass
200 lb	III Sing 5000	20	0.48	pass
500 lb	III Sing 5000	30	0.50	pass
2000 kg	III Sing 5000	40	0.32	pass
2000 kg	III Sing 5000	40	0.28	pass
4000lb	III Mult 5000	40	0.80	pass
4000lb	III Mult 5000	40	0.18	pass
60 klb	III Mult 5000	50	0.70	pass
60 klb	III Mult 5000	50	0.74	pass
65 klb	III Mult 5000	50	0.66	pass
100 klb	III Mult 5000	50	0.31	pass
30 t	III Mult 5000	50	0.30	pass
		percent passing ==>		69%

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Appendix D

National Type Evaluation Technical Committee (NTETC) Software Sector

March 2 - 3, 2010
Sacramento, California

Annual Meeting Summary

Carry-over Items

1. NCWM/NTEP Policies – Issuing CCs for Software ..... NTEP - D1
2. Definitions for Software Based Devices ..... NTEP - D2
3. G-S.1. Identification (Software) ..... NTEP - D3
4. Identification Of Certified Software ..... NTEP - D8
5. Software Protection/Security ..... NTEP - D11
6. Software Maintenance and Reconfiguration ..... NTEP - D13
7. Verification In The Field by the Weights/Measures Inspector ..... NTEP - D16
8. NTEP Application ..... NTEP - D17

New Items

9. Training of Field Inspectors ..... NTEP - D18
10. Next Meeting ..... NTEP - D20

Appendices

Appendix A: Report on 2009 Interim Meeting ..... NTEP - D21
Appendix B: Report on International W&M Activity ..... NTEP - D22
Appendix C: 2010 Software Sector Meeting Attendee List ..... NTEP - D23

Carry-over Items

1. NCWM/NTEP Policies – Issuing CCs for Software

Source: NCWM Reports

Background: For additional background on this item, see the 2009 Software Sector Meeting summary.

Recommendation: The Sector recommended the following language to be submitted to the National Type Evaluation Program (NTEP) Committee as a policy change.

> **Software Requiring a Separate CC: Software, which is implemented as an add-on to other NTEP Certified main elements to create a weighing or measuring system and its metrological functions, are significant in determining the first indication of the final quantity. Such software is considered a main element of the system requiring traceability to an NTEP CC.**

NOTE: OEM software *may* be added to an existing CC or have a stand-alone CC with applicable applications (e.g., a manufacturer adding a software upgrade to their ECR or point-of-sale system, vehicle scale weigh-in/weigh-out software added as a feature to an indicating element, automatic bulk weighing, liquid-measuring device loading racks, etc.) and minimum system requirements for "type P" devices (see proposed software definition below). It may be possible for a manufacturer to submit a single application for both hardware and software contained in the same device. A single CC would be issued.

In this instance, OEM refers to a 3rd party. The request to add software could be made by the original CC holder on behalf of the 3rd party. Alternatively, a new CC could be created that refers to the original CC and simply lists the new portions that were examined.

The NTEP committee included this item in their agenda (NTEP Committee 2009 Interim Agenda Item 8); there was no discussion during the open hearing, and this became a Voting item for the 2009 Annual Meeting. At the 2009 National Conference on Weights and Measures (NCWM) Annual Meeting, this proposal was passed unanimously by the Conference.

Discussion: The NTEP Administrator was asked if there is to be any actual change in any document or is this strictly a procedural change? How do the labs know they can/should handle software items differently now? The answers to these questions were: there have not been any changes to Pub 14 this year; the Certificates of Conformance (CC) can now say "software;" the labs know this; and NTEP policy is communicated to the labs. It was suggested that software could be a secondary classification on the certificates.

Conclusions: Our work is complete on this item; it will be removed from the agenda.

2. Definitions for Software Based Devices

Source: 2009 Carryover Item 310-2. This item originated from the National Type Evaluation Technical Committee (NTETC) Software Sector and first appeared on the Committee's 2007 Agenda as Developing Item Part 1, Item 2.

From: NCWM Publication 15, 2010:

310-2 Appendix D – Definition of Electronic Devices, Software-Based and Built-for-Purpose Device

Item Under Consideration: Delete the current definition of built-for-purpose device as follows:

~~***Built for purpose device. Any main device or element, which was manufactured with the intent that it be used as, or part of, a weighing or measuring device or system. [1.10] (Added 2003)***~~

and, add a new definition and a cross-reference to Appendix D in the National Institute of Standards and Technology (NIST) Handbook 44 (HB 44) for "Electronic devices, software-based" as follows to replace the current definition of "built-for-purpose device":

Electronic devices, software-based. – Weighing and measuring devices or systems that use metrological software to facilitate compliance with Handbook 44. This includes:

(a) Embedded software devices (Type P), aka built-for-purpose. – A device or element with software used in a fixed hardware and software environment that cannot be modified or uploaded via any interface without breaking a security seal or other approved means for providing security and will be called a "P," or

(b) Programmable or loadable metrological software devices (Type U), aka not-built-for-purpose. – A personal computer or other device and/or element with PC components with programmable or loadable metrological software and will be called "U." A "U" is assumed if the conditions for embedded software devices are not met.

Software-based devices – See Electronic devices, software-based.

Background: For additional background information on this item, please reference the 2009 Software Sector Meeting Summary and the 2010 NCWM Interim Meeting Agenda (Pub 15).

At its 2009 Interim Meeting, the Central Weights and Measures Association (CWMA) received comments that the proposal is sufficiently developed and recommends moving this item forward as a Voting item on the Committee's Agenda. At its 2009 Annual Technical Conference, the Western Weights and Measures Association (WWMA) received comments from Mr. Lou Straub, speaking on behalf of the Scales Manufacturers Association (SMA), indicating the SMA continues to oppose this item, noting that requirements should apply equally to the two different device types described. The WWMA received no other input on this item, and recommends this item should remain Informational until the Software Sector has had an opportunity to review comments from the 2009 NCWM Annual Meeting and any comments made at subsequent regional weights and measures association meetings. At its 2009 Annual Meeting, the Southern Weights and Measures Association (SWMA) recommended keeping the status of this proposal to delete the current definition of built-for-purpose device, and add a new definition and a cross-reference to Appendix D in HB 44 for "Electronic devices, software-based" to replace the current definition of "built-for-purpose device" as an Informational item. The SWMA agreed that the Software Sector should continue to work on the proposal until it arrives at some final language. During its 2009 Interim Meeting, the Northeastern Weights and Measures Association (NEWMA) stated that it supports the Committee's decision to keep this item Informational to allow updated comments from the regional Weights and Measures associations and other interested parties based on information in the summary of the March 2009 meeting of the Software Sector. The item remains as an Informational item on 2010 Annual Meeting Agenda; the Specifications and Tolerances (S&T) Committee indicated that they look forward to additional work being done on this item by the Sector.

Discussion: Initially, it was decided to table discussion on this item; as we worked on items further down the list, we would see if it was really necessary to include the 'Type P' and 'Type U' differentiation at this time; if so, we would come back and work on the definitions. In particular, Agenda Item 3 (which contained references to the proposed definitions) would be examined in more detail to see if we couldn't satisfy the concerns of the SMA by avoiding differentiation of device types for identification purposes.

Conclusion: When all other Agenda items had been discussed, it was determined that there was no real need to introduce this differentiation in device types at the current time. It was decided that we would recommend to S&T that **this item be Withdrawn** for now (with the realization that work on future items may require we reintroduce the concept). The previously proposed language is recorded herein, if future requirements would revive the need for the definitions to differentiate between device types.

3. G-S.1. Identification (Software)

Source: NTETC Software Sector

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

1. The NTEP CC Number must be continuously displayed or hard marked;

2. The version must be software-generated and shall not be hard marked;

3. The version is required for embedded (Type P) software;

4. Printing the required identification information can be an option;

5. Command or operator action can be considered as an option in lieu of a continuous display of the required information; and

6. Devices with Type P (embedded) software must display or hard mark the make, model, and S.N. to comply with G-S.1. Identification.

The Sector developed marking information requirements and submitted a proposal to the S&T Committee for considered inclusion in HB 44. There was much additional comments and various proposed versions of the table from NIST Weights and Measures Division (WMD), et al. (The complete background on this item can be seen in the 2010 Interim Meeting Agenda, NCWM Pub 15, 2010.)

The Sector noted that though currently, it is allowable to display the CC number via a menu, there has been some challenges locating this information in the field, due to the vagueness of the term "easily recognized." Hence, since it is left to the interpretation of the NTEP laboratory to ascertain whether a device's method for displaying the CC number meets the requirements, this vagueness has not been addressed in this new recommendation.

At the 2009 Software Sector Meeting, it was agreed that the proposed table had not accomplished the intended purpose of clarifying the requirements, indeed, it seemed to have generated more confusion. Hence, this item was revisited from the beginning, and it was suggested that a simpler approach be taken, namely to modify the text of G-S.1. to match our intent. The proposal from our Sector was as follows:

G-S.1.Identification. – All equipment, except weights and separate parts necessary to the measurement process but not having any metrological effect **and manufactured ~~prior to~~after January 1, 201X**, shall be clearly and permanently marked for the purposes of identification with the following information:

(a) the name, initials, or trademark of the manufacturer or distributor;

(b) a model identifier that positively identifies the pattern or design of the device;

(1) The model identifier shall be prefaced by the word "Model," "Type," or "Pattern." These terms may be followed by the word "Number" or an abbreviation of that word. The abbreviation for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., No or No.). The abbreviation for the word "Model" shall be "Mod" or "Mod." Prefix lettering may be initial capitals, all capitals, or all lowercase.

[Nonretroactive as of January 1, 2003]

(Added 2000) (Amended 2001)

*(c) a nonrepetitive serial number, except for equipment with no moving or electronic component parts and **~~not built-for-purpose software based~~** **software that is not part of a Type P (built-for-purpose) device**;*
[Nonretroactive as of January 1, 1968]

(Amended 2003 **and 201X**)

(1) The serial number shall be prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required serial number.
[Nonretroactive as of January 1, 1986]

(2) Abbreviations for the word "Serial" shall, as a minimum, begin with the letter "S," and abbreviations for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., S/N, SN, Ser. No., and S. No.).
[Nonretroactive as of January 1, 2001]

(d) the current software version or revision identifier for ~~*not built for purpose*~~ ***software-based electronic*** *devices;*
[Nonretroactive as of January 1, 2004]
(Added 2003) **(Amended 201X)**

(1) The version or revision identifier shall be prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required version or revision.
[Nonretroactive as of January 1, 2007]
(Added 2006)

(2) Abbreviations for the word "Version" shall, as a minimum, begin with the letter "V" and may be followed by the word "Number." Abbreviations for the word "Revision" shall, as a minimum, begin with the letter "R" and may be followed by the word "Number." The abbreviation for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., No or No.).
[Nonretroactive as of January 1, 2007]
(Added 2006)

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

The required information shall be so located that it is readily observable without the necessity of the disassembly of a part requiring the use of any means separate from the device.
(Amended 1985, 1991, 1999, 2000, 2001, 2003~~, and,~~ 2006 **and 201X**)

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

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

(b) The Certificate of Conformance (CC) Number shall be:

(1) permanently marked on the device;

(2) continuously displayed; or

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

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

[Nonretroactive as of January 1, 2004]
(Added 2003) (Amended 2006 **and 201X**)

Discussion: As was noted in the review of what transpired at the Interim Meeting, there appears to be continued resistance, especially from the SMA, to differentiating between Type P and Type U software types. From their perspective it is 'all software,' and they are concerned that marking requirements will be more complex if we delineate between two different types of software-based devices. Also, the inspectors want to standardize the method of locating the marking information when it is being displayed via menu, and insist that it should be very simple for field personnel to locate. Some additional work by the group resulted in this modified proposal that does not include the new definitions and does not specifically delineate any device types (in fact, it removes the existing mention of 'built-for purpose'):

G-S.1. Identification. – All equipment, except weights and separate parts necessary to the measurement process but not having any metrological effect ~~**and manufactured after January 1, 201X**~~, shall be clearly and permanently marked for the purposes of identification with the following information:

(a) the name, initials, or trademark of the manufacturer or distributor;

(b) a model identifier that positively identifies the pattern or design of the device;

(1) The model identifier shall be prefaced by the word "Model," "Type," or "Pattern." These terms may be followed by the word "Number" or an abbreviation of that word. The abbreviation for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., No or No.). The abbreviation for the word "Model" shall be "Mod" or "Mod." Prefix lettering may be initial capitals, all capitals, or all lowercase.
[Nonretroactive as of January 1, 2003]

(Added 2000) (Amended 2001)

(c) a nonrepetitive serial number, except for equipment with no moving or electronic component parts ~~***and not built for purpose software based***~~ ***software that is not part of a Type P (built-for-purpose) device****;*
[Nonretroactive as of January 1, 1968]

(Amended 2003 **and 201X**)

(1) The serial number shall be prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required serial number.
[Nonretroactive as of January 1, 1986]

(2) Abbreviations for the word "Serial" shall, as a minimum, begin with the letter "S," and abbreviations for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., S/N, SN, Ser. No., and S. No.).
[Nonretroactive as of January 1, 2001]

(d) the current software version or revision identifier for ~~***not built for purpose***~~ ***software-based electronic*** *devices;*
[Nonretroactive as of January 1, 2004]

(Added 2003) **(Amended 201X)**

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

(Added 2006)

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

(Added 2006)

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

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

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

Comments: The thinking was that standalone software has no moving or electronic component parts, and hence, is not required to have a serial number. This was considered acceptable by the Sector; the Sector sees no value in requiring vendors' submittals for NTEP approval that are software-only to print serial numbers on their distribution media (CD, DVD, etc). It was observed by California that if we continue with the concept of only examining 'devices' that typically off-the-shelf PC's have their own serial number, generated by the manufacturer. This can and has been used by the inspectors as a means to meet G-S.1.(c) though the prefix/abbreviation is sometimes an issue, since the PC manufacturer knows nothing about G-S.1.

It was also suggested that G-S.1.1.(b)(3) be modified to omit the term "easily recognized"; instead, a limited list of options would be available. A first pass at reworking G-S.1.1(b)(3) resulted in:

G-S.1.1. Location ~~Method~~ of Marking Information for ~~Not-Built-For-Purpose-all~~ Software-Based Electronic Devices. – *For* ***~~not-built-for-purpose~~, software-based*** *devices* ***~~manufactured after January 1, 201X~~,*** *either:*

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

(b) The CC Number shall be:

(1) *permanently marked on the device;*

(2) *continuously displayed; or*

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

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

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

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

[Nonretroactive as of January 1, 2004]

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

This new language for G-S.1.1.(3)(b) is in the early stages, and the Software Sector would like feedback regarding G-S.1.1(b)(3), particularly suggestions for specific allowed menu items/icons that should be included on the list.

***Conclusion*:** The revised G-S.1. (and G-S.1.1.) above will be sent to NCWM S&T Committee as our updated recommendation.

Note: *It was observed by WMD (after our meeting adjourned) that there have been several revisions, and revisions to revisions, to our G-S.1. proposals. The proofing (font, bold/italic, etc.) may no longer reflect the correct form with which changes are to be submitted, and they may not actually reflect the changes from what is currently in the 2010 Handbook. This needs to be addressed prior to submission to the S&T Committee; the Chair will compare the proposed language to the current HB 44 language and make sure the desired changes are marked properly in the forwarded proposal.*

4. Identification of Certified Software

Source: NTETC Software Sector

Background/Discussion: 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 the European Cooperation in Legal Metrology (WELMEC) and the International Organization of Legal Metrology (OIML)). F rom 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 (WM) inspector information that something has changed? (Yes, the Category III audit trail or other means of sealing). How can the WM 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 OIML requirement in HB 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 from 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.?)

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.

Pub. 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**~~ from 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 HB 44's marking requirements.

Recommendation: Recommend the following change to HB 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 201X)**

(1) The version or revision identifier shall be prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required version or revision.
[Nonretroactive as of January 1, 2007]
(Added 2006)

(2) Abbreviations for the word "Version" shall, as a minimum, begin with the letter "V" and may be followed by the word "Number." Abbreviations for the word "Revision" shall, as a minimum, begin with the letter "R" and may be followed by the word "Number." The abbreviation for the word "Number" shall, as a minimum, begin with the letter "N" (e.g., No or No.).
[Nonretroactive as of January 1, 2007]
(Added 2006)

(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 201X)

Also the Sector recommends the following information be added to Pub. 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)***

Conclusions: The item needs additional discussion and development by the Sector. Outstanding questions: 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? Do we still have to be able to display/print the identifier if it is hard-marked?

5. Software Protection / Security

Source: NTETC Software Sector

Background: The sector agreed that HB 44 already has an audit trail and physical seal, but the question on the table is, does the Handbook need to be enhanced to sufficiently discourage the facilitation of fraud, intentional or accidental, where software is concerned?

WELMEC and OIML again have addressed this issue specifically when dealing with software. From WELMEC:

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:

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 derived a suitable checklist for Pub 14 from the OIML checklist, and asked the current NTEP labs to begin using this checklist on a trial basis for new type approval applications.

Devices with embedded software TYPE P (aka built-for-purpose)			
	Declaration of the manufacturer that the software is used in a fixed hardware and software environment, and		**Yes ☐ No ☐ N/A ☐**
	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.*		
	The software documentation contains:		
		description of all ~~the metrologically significant~~ functions, **designating those that are considered metrologically significant** ~~*OIML states that there shall be no undocumented functions*~~	**Yes ☐ No ☐ N/A ☐**
		description of the securing means (evidence of an intervention)	**Yes ☐ No ☐ N/A ☐**
		software identification	**Yes ☐ No ☐ N/A ☐**
		description how to check the actual software identification	**Yes ☐ No ☐ N/A ☐**
	The software identification is:		
		clearly assigned to the metrologically significant software and functions	**Yes ☐ No ☐ N/A ☐**
		provided by the device as documented	**Yes ☐ No ☐ N/A ☐**
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)			
	The *metrologically significant* software is:		
		documented with all relevant (see below for list of documents) information	**Yes ☐ No ☐ N/A ☐**
		protected against accidental or intentional changes	**Yes ☐ No ☐ N/A ☐**
	Evidence of intervention (such as, changes, uploads, circumvention) is available until the next verification / inspection (e.g., physical seal, Checksum, CRC, audit trail, etc. means of security)		**Yes ☐ No ☐ N/A ☐**
Software with closed shell (no access to the operating system and/or programs possible for the user)			
	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 ☐**
	Check whether the manufacturer has submitted a written declaration of the completeness of the set of commands		**Yes ☐ No ☐ N/A ☐**
Operating system and/or program(s) accessible for the user:			
	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~~ WM jurisdiction and type-specific parameters)		**Yes ☐ No ☐ N/A ☐**
	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 ☐**
Software interface(s)			
	Verify the manufacturer has documented:		
		the program modules of the metrologically significant software are defined and separated	**Yes ☐ No ☐ N/A ☐**

		the protective software interface itself is part of the metrologically significant software	**Yes ☐ No ☐ N/A ☐**
		the *functions* of the metrologically significant software that can be accessed via the protective software interface	**Yes ☐ No ☐ N/A ☐**
		the *parameters* that may be exchanged via the protective software interface are defined	**Yes ☐ No ☐ N/A ☐**
		the description of the functions and parameters are conclusive and complete	**Yes ☐ No ☐ N/A ☐**
		there are software interface instructions for the third party (external) application programmer.	**Yes ☐ No ☐ N/A ☐**

The Sector hopes to obtain feedback at this meeting from the NTEP labs regarding this checklist.

Discussion: The labs again indicated they had not had a chance to utilize the checklist. The list was reviewed and some minor modifications to the checklist text were incorporated as shown in this excerpt:

	The software documentation contains:		
		the description of all ~~the metrologically significant~~ functions**, designating those that are considered metrologically significant** ~~*OIML states that there shall be no undocumented functions*~~	**Yes ☐ No ☐ N/A ☐**
		the description of the securing means (evidence of an intervention)	**Yes ☐ No ☐ N/A ☐**
		the software identification	**Yes ☐ No ☐ N/A ☐**

Conclusion: Work is ongoing on this item with the intent that it eventually be incorporated as a checklist in Pub 14; again the labs are requested to try utilizing this checklist for any evaluations on software-based electronic devices.

6. Software Maintenance and Reconfiguration

Source: NTETC Software Sector

Background: After the software is completed, what do the manufacturers use to secure their software?

Discussion: The following items were reviewed by the Sector. Note that agenda item 3 also contains information on Verified and Traced updates and Software Log.

a. Verify that the update process is documented (OK).

b. 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, for example, 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 <u>or become inoperative.</u>

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, for example, 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 <u>or become inoperative.</u>

Examples are not limiting or exclusive.

c. 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

d. 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 U.S. WM 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.

The Sector also worked towards language proposed for defining the requirements for a Traced Update (currently considered as relevant for Pub 14):

For a Traced Update, an event logger is required. The logger shall be capable of storing a minimum of the 10 most recent updates. An entry shall be generated for each software update.

Use of a Category 3 audit trail is acceptable and required for the software update logger Traced Update. In this case the existing requirement of 1,000 entries supersedes the 10 entry requirement. If software update is the only loggable event, then the Category 3 audit trail can be limited to only 10 entries. A software update log entry representing a software update shall include the following: the software identification of the newly installed version.

- **an event counter;**
- **the date and time of the change;**

- **the event type/parameter ID, which indicates a software update event (if not using a dedicated update log); and**

- **the new value of the parameter, which is the *software identification* of the newly installed version.**

A Category III device may include the software update events in the Category III audit log, in lieu of a separate software update log; the existing requirement for 1000 entries supersedes the requirement for 10 entries.

The traceability means and records are part of the metrologically significant software, and should be protected as such. If software separation is employed, the software used for displaying the audit trail belongs to the fixed metrologically significant software. *(Note: This needs to be discussed further due to some manufacturer's concerns about where the software that displays the audit trail information is located and who has access if this feature is provided. Manufacturers did indicate that there are methods available to encrypt the audit trail information; however, it cannot be protected from being deleted.)* (include flowchart from OIML D 31)

The Sector discussed how to best move this item forward, and there was also some discussion as to whether new language for the General Code was required. The following new text was proposed:

G-S.9. Metrologically Significant Software Updates

The updating of metrologically significant software shall be considered a sealable event. Metrologically significant software that does not conform to the approved type is not allowed for use.

The NTEP Administrator indicated that the current requirements in G-S.8. already make the statement that any changes that affect metrological function are sealable; hence, software updates may be covered and the proposed G-S.9. unnecessary. Mr. Todd Lucas suggested we go ahead and submit the proposed G-S.9. to the Committee and request a clarification/interpretation of G-S.8.

At the 2009 meeting, the Sector opined that the explicit language proposed for G-S.9. is clearer than any implied requirement in G-S.8. The Sector would like a clarification/interpretation of G-S.8. as it relates to software updates from the S&T Committee (with their response preferably to be included in Pub 16). The Sector will also continue to develop the proposed text (and flow chart) targeted for inclusion in Pub 14.

Discussion: The Sector reviewed the proposal and reconsidered allowing a separate 'update log'. It was decided that this would probably generate confusion and is not likely to be adopted by manufacturers anyway. Hence, the previously proposed text was modified to require a Category III audit trail for 'traced updates':

~~**For a Traced Update, an event logger is required. The logger shall be capable of storing a minimum of the 10 most recent updates.An entry shall be generated for each software update.**~~ Use of a Category 3 audit trail is ~~acceptable~~ required for the ~~software update logger~~ Traced-Update. ~~**In this case the existing requirement of 1,000 entries supersedes the 10 entry requirement.**~~ If software update is the only loggable event, then the Category 3 audit trail can be limited to only 10 entries. A ~~**software update**~~ log entry representing a software update shall include the ~~following:~~ the software identification of the newly installed version.

- ~~An event counter;~~

- ~~the date and time of the change; and~~

- ~~the event type/parameter ID, which indicates a software update event (if not using a dedicated update log);~~

- ~~the new value of the parameter, which is the *software identification* of the newly installed version.~~

~~A Category III device may include the software update events in the Category III audit log in lieu of a separate software update log; the existing requirement for 1,000 entries supersedes the requirement for 10 entries.~~

Conclusions: The general consensus of the group after considering feedback from external interested parties is that a new G-S.9. with explicit requirements is not necessary (nor likely to be adopted by the Conference), and that this requirement belongs in the Pub 14 lists of sealable parameters rather than in HB 44; i.e.

The updating of metrologically significant software shall be considered a sealable event.

Additional work is to be done to further develop the proposed text toward inclusion in Pub 14.

7. Verification in the Field, By the W&M Inspector

Source: NTETC Software Sector

Background Question: What tools does the field inspector need?

Possible Answers:

- Have NTEP CC No. continuously displayed. (needs some type of protection) during the normal weighing or measuring operation.

- Clear and simple instructions on NTEP CC to get to the other inspection information.

- The CRC, checksum, version number, etc., needs to be easily accessible from operator console.

- Inspector needs to know how to access audit trail.

- System information is easily accessible (ram, OS, etc.).

- System parameters are easily accessible (AZT, motion, time outs, etc.).

Some discussion about system information requirements for the inspector took place… does the inspector really need to have access to OS, RAM information, etc.? (General opinion seems to be if there is a dependency, then the NTEP lab would specifically include that requirement in the CC.)

Audit trail info – the question was asked, does there need to be a specific requirement for providing access to this information?

Regarding the concept of First Final – There was some concern expressed as to how the inspectors are able to discern where the indication of first final be found for the system (as opposed to the devices in the system). What devices in the system are of concern to the inspector? The NTEP Administrator indicated that field inspectors need to follow the system all the way to receipt/bill generation.

Data transmission is an issue when considering systems as opposed to devices…how far does the inspector's jurisdiction extend? (Should we model future requirements on the WELMEC section concerning DTD/DSD?) Decision: data transmission/storage is not currently being addressed by the Sector at this time. Since part of the Sector's mission is education, do we want to assist in developing training aids for labs/inspectors related to

evaluating/inspecting software-based devices? This will be a topic to be added to the Sector's Agenda for the next meeting.

At the 2009 meeting, the Sector decided to continue to develop this item, and initiate a new Agenda item specific to inspector training in relation to evaluating/validating software-based devices.

Discussion: A question from the floor requested opinion as to whether this Agenda item continued to serve a purpose. During discussion, it was stated that the goals of this item have all been addressed as part of all the other agenda items save one (training), and inspector training will now be covered in a new item (Training of Field Inspectors), leaving this item without merit.

Conclusion: No argument was made for retaining this item as a separate item on the Agenda. This item will be removed from future Agendas.

8. NTEP Application for Software ~~requiring a separate Certificate of Conformance~~ – based Electronic Devices

Source: NTETC Software Sector

Background/Discussion: The purpose of initiating this item was to identify issues, requirements, and processes for type approving Type U device applications. It was suggested that it may be useful to the labs to devise a separate submission form for software for Type U devices. Question: What gets submitted? What requirements and mechanisms for submission should be available?

Validation in the lab - all required subsystems shall be included to be able to simulate the system as installed.

It was noted this Agenda item is irrelevant if the NTEP Committee does not approve the pending item up for Vote.

Mr. John Roach, California NTEP Lab, stated that if the software package being evaluated supports platforms/subsystems from multiple manufacturers, testing should be done using at least two platforms/subsystems. Scale labs and scale manufacturers indicated that this is not usually done for scale evaluations.

Conclusion of 2009 Sector Meeting: The Sector will continue to develop this item, contingent on the status of the related NTEP Committee Agenda item after the 2009 Annual Meeting.

Discussion: Since the NTEP Committee passed the related item at the Annual Meeting, we will continue to work on this. The NTEP director indicated that we can move in this direction, but felt that it was somewhat premature to develop this thoroughly now. At the point where the Sector has developed checklist requirements, then we could move to perhaps add a subsection to current NTEP applications for applicable software. Refer to D-31.6.1. It was also agreed that there seems to be no reason for limiting the scope of this item to software-only applications; hence, all software/software-based devices could benefit from an enhanced application process. Hence, the description of this agenda item was modified as shown in the marked up heading.

Conclusion: The item will be revisited at the 2011 Meeting, and it will be decided whether to begin further development of this item at this time.

New Items

9. Training of Field Inspectors

Source: NTETC Software Sector

Background: During discussions at the 2009 meeting, the Sector concluded that a new Agenda item should be initiated specific to the training of field inspectors in relation to evaluating/validating software-based devices.

Discussion: California has an Examination Procedure Outline (EPO) that begins to address this. Use Handbook 112 as a pattern template for how it could read.

Items to be addressed:

- Certificate of Conformance
- Terminology (as related to software) beyond what is in HB 44
- Reference materials / information sources
- Safety

System Verification Tests

NOTE: Item numbers 1 through 5 apply to both weighing and measuring devices. Numbers 6 and 7 are specific to weighing devices; while numbers 9 and 10 apply to measuring devices.

1. Identification. The identification (ID) tag may be on the back room computer server and could be viewed on an identification screen on the computer monitor. The ID information may be displayed on a menu or identification screen. Though currently discouraged, some systems may be designed so the system must be shut down and reset to view the ID information. **G-S.1. (1.10.)**

    1.1. Manufacturer.

    1.2. Model designation.

2. Provisions for sealing. **G-S.8. [1.10.]; S.1.11. [2.20]; S.2.2. [3.30.]**

    2.1. Verify sealing category of device (refer to Certificate of Approval for that system).

    2.2. Verify compliance with certificate.

3. Units of measure.

    3.1. A computer and printer interfaced to a digital indicator shall print all metrological values, intended to be the same, identically**. G-S.5.2.2.(a); G-S.5.1. [1.10.]**

    3.2. The unit of measure, such as lb, kg, oz, gal, qts, liters, or whatever is used, must agree.

4. Operational controls, indications and features (buttons and switches). Verify that application criteria and performance criteria are met (refer to Certificate of Approval).

    4.1. Any indication, operation, function or condition must not be represented in a manner that interferes with the interpretation of the indicated or printed values.

5. Indications and displays.

    5.1. Attempt to print a ticket. The recorded information must be accurate or the software must not process and print a ticket with erroneous data interpreted as a measured amount.

Weighing Devices

6. Motion detection.

    6.1. For railway track, livestock, and vehicle scales apply or remove a test load of at least 15 d while simultaneously operating a print button, push-button tare or push-button zero. A good way to do this is to try to print a ticket while pulling the weight truck or another vehicle onto the scale. Recorded values shall not differ from the static display by more than 3 d. Perform the test at 10 %, 50 % and 100 % of the maximum applied test load. **S.2.5.1.(a) [2.20.]; EPO NO. 2-3, 2.4.**

    6.2. For all other scales, apply or remove at least 5d. Printed weight values must agree with the static weight within 1d and must exactly agree with other indications. **S.2.5.4.(b) [2.20.]; EPO NO. 2-3, 2.4.**

7. Behind zero indication.

    7.1 Apply a load in excess of the automatic zero setting mechanism (AZSM) and zero the scale. **S.2.1.3. [2.20.]; EPO NO. 2-3, 2.4., 2.5.2.**

    Example: On a vehicle scale have someone stand on the scale, then zero them off (AZSM is 3d). Remove the weight (person) and note the behind zero display (usually a minus weight value) or error condition.

    7.2. Attempt to print a ticket. With a behind zero condition, (manually or mechanically operated) a negative number must not be printed as a positive value.

8. Over capacity.

    8.1. Manually enter a gross weight if permissible or apply a test load in excess of 105 % of the scale's capacity. **S.1.7. [2.20.]; S.1.12., UR.3.9. [2.20.]**

    8.2. Attempt to print a weight ticket. A system must not print a ticket if the manually entered weight or load exceeds 105 % of the scale capacity.

Measuring Devices

10. Motion detection.

    10.1. Initiate flow through the measuring element. Attempt to print a ticket while the product is flowing through the measuring chamber. The device must not print while the indication is not stable. **S.2.4.1. (3.30.)**

11. Over capacity.

    11.1. Attempt to print a ticket in excess of the indicated capacity. A system must not print a ticket if the device is manually or mechanically operated in excess of the indicated value**.**

NOTE: Be aware of error codes on the indicator which may be interrupted as measured values.

Conclusion: This item is in the early stages; work will continue on the item working toward materials to aid in the training of field inspectors. It was indicated that working in conjunction with the Professional Development Committee (PDC) to develop training materials, etc. would be a logical path of progress once we have developed the information content to include.

10. Next meeting

Background: The Sector is on a yearly schedule for Sector meetings. The NTEP Administrator determines when the next meeting is possible.

Discussion: The NTEP Administrator indicated that the NTETC meetings are to be scheduled where the Conference gets the most 'bang for the buck', so that implies (considering our spring schedule) one of the states with an NTEP lab. Hence we've been rotating among Annapolis, Maryland, Columbus, Ohio, and Sacramento, California. It was also mentioned by the Technical Advisor that this rotating of the location has been quite beneficial to the group, considering the variety of input from individuals not typically able to make the trip to attend distant meetings.

Conclusion: Given the above, it was suggested that it would be Maryland's turn in 2011. In keeping with the March timeframe and trying to avoid the last blast of winter, the group decided to return to Annapolis, Maryland, preferably March 15-16, 2011. Second choice would be the following week (March 22-23). The Maryland lab personnel will assist the NCWM staff in suggesting one or more suitable host facilities for the meeting.

Appendix A: Report on 2009 Interim Meeting

There were two items on the NCWM S&T Committee agenda related to our mission – Item 310-2 (definitions of software based devices) and Item 310-3 (marking requirements). The consensus was that they still need work, and they remain informational.

It seemed from the comments made during the open hearings that the membership didn't see a clear benefit to the field inspectors, and the scale manufacturers were also resistant to the change, fearing distinction between different types of devices would complicate marking, and additionally the SMA didn't see a difference between built-for-purpose and non-built-for-purpose.

In general, the feedback at the Interim gave the impression to Sector members that attended that we need to back up a little.

Appendix B: Report on International WM Activity

There's a new project regarding field verification, but there likely won't be activity this year.

There weren't too many changes to WELMEC 7.2. They are mainly clarifications. The current methodologies are now considered a bit too restrictive, so they're being reconsidered.

There has been an update to one of our referenced WELMEC documents since our last Software Sector meeting:

Software Guide (Measurement Instruments Directive 2004/22/EC) is now at Issue 4.

You can download an updated copy of this document at http://www.welmec.org/publications/7-2.asp

The changes are minor, including:

- Removal of the requirement that the NB maintain a file of the documentation and (if necessary) the software supplied for Type P & Type U submissions.

- Software Download extension has two additions, listed below in **blue** (underscored and bolded) below.

9 Extension D: Download of Legally Relevant Software

This extension shall be used for the download of legally relevant software **as long as the metrological characteristics remain unchanged and the declaration of conformity is still valid**, (e.g., bug-fixes). These requirements are to be considered in addition to the basic requirements for Types P and Type U described in Chapters 4 and 5 in the guide.

D2: Authentication of downloaded software
Means shall be employed to guarantee that the downloaded software is authentic, and to indicate that the downloaded software has been approved by an NB.
Specifying Notes:

1. Before the downloaded software is used for the first time, the measuring instrument shall automatically check that:

   a. The software is authentic (not a fraudulent simulation).

   b. The software is approved for that type of measuring instrument.

2. The means by which the software identifies its NB approval status shall be made secure to prevent counterfeiting of the NB status.

3. If downloaded software fails any of the above tests, see D1.

4. **If a manufacturer intends to change or update the legally relevant software he shall announce the intended changes to the responsible notified body. The notified body decides whether an addition to the existing TEC is necessary or not. For software download it is indispensable that there is a software identification which is unambiguously assigned to the approved software version.**

Appendix C: 2010 Software Sector Meeting Attendee List

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Appendix E

National Type Evaluation Committee (NTETC) Belt-Conveyor Scale (BCS) Sector

February 25, 2010 Meeting Summary

A. NCWM Publication 14 Updates E1
1. Handbook 44, UR.3.2. (S&T Committee agenda Item 321-1) E1
2. Handbook 44, S.1.3.1. (S&T Committee agenda Item 321-3) E1
3. Handbook 44, N.2.and N.2.1. (S&T Committee agenda Item 321-5) (Number of Tests during Initial Verification) E2
4. Handbook 44, T.1.1. (S&T Committee agenda Item 321-6) E3
5. Handbook 44, Sections N.3.1.2., N.3.1.3., and S.3.3.1. ..... E3

B. Proposed Update to NCWM Publication 14 Belt-Scale Checklist E4

C. Develop a List of Sealable Parameters for BCS Systems E5

D. New Business E6
1. Revisit parameters used to categorize "Family" groups E6

E. Attendance E6

A. NCWM Publication 14 Updates

1. Handbook 44, UR.3.2. (S&T Committee agenda Item 321-1)

Background: At the 2009 National Conference on Weights and Measures (NCWM) Annual Meeting, the Conference adopted an amendment to paragraph UR.3.2. to clarify that zero-load and material or simulated-load tests are required to be performed between official testing at intervals determined by the statutory authority or by the manufacturer. Full details of the amendments to the National Institute of Standards and Technology (NIST) Handbook 44 (HB 44) may be found in the Specifications and Tolerances (S&T) Committee 2009 Interim Report.

Discussion/Conclusion: The Sector members agreed that this is a HB 44 User Requirement and not intended for use during type evaluation. No changes are recommended in Publication 14 (Pub 14).

2. Handbook 44, S.1.3.1. (S&T Committee agenda Item 321-3)

Background: At the 2009 NCWM Annual Meeting, the Conference adopted an amendment to paragraph S.1.3.1. to reconcile the value of the minimum scale division (0.1 % of the minimum totalized load) with the value of the minimum test load (800 divisions) listed in paragraph N.2.3.(a).

Recommendation: National Type Evaluation Technical Committee (NTETC) Belt-Conveyor Scales (BCS) Sector Technical Advisor recommended the amendment to NCWM Pub 14 Section 1.8. as shown below to reflect changes in HB 44 BCS Code, design specification S.1.3.1.

1.8. *(S.1.2. and S.1.3.1.) The scale division shall be in increments of 1, 2, or 5 times 10k where k is an integer* ***and shall not be greater than 0.125 % (1/800) of the minimum totalized load****.* Yes ☐ No ☐ N/A ☐

1.8.1. *What is the scale division?*

Unit	*Abbreviation*
pounds	*lb or LB*
U.S. short ton	*Ton or T*
U.S. long ton	*LT*
Metric ton	*t*
kilograms	*kg*

1.8.2. Verify that the value of the scale division is protected by an acceptable security means (e.g., physical seal or audit trail).

Discussion/Conclusion: Sector members agreed to recommend the proposed change to Pub 14 BCS Section 1.8., and add a new Section 1.8.2. to verify that the value of the scale division should be a sealable parameter which is protected by a security means as shown above.

3. Handbook 44, N.2. and N.2.1. (S&T Committee agenda Item 321-5) (Number of Tests during Initial Verification)

Background: At the 2009 NCWM Annual Meeting, the Conference adopted an amendment to paragraph N.2.1. to provide clarification of how many test runs are required during an official test. Portions of the wording changes in N.2.1. relate to testing a belt-conveyor scale at a single flow rate (using a minimum of four test runs); if it can be verified that the system is operated using a single flow rate and that rate does not vary in either direction by an amount more than 10 % of the normal flow rate that can be developed at the installation for at least 80 % of the time.

These changes are applicable to specific installations that operate exclusively (within parameters) at one flow rate, and would, therefore, not impact procedures used during type evaluation testing.

Other changes to N.2.1. will impact testing procedures regardless of the specifics of an installation, and should, therefore result in changes to Pub 14.

Recommendation: To reflect changes in the 2010 edition of HB 44, the technical advisor recommends that Pub 14 page BCS-15 be amended as follows:

13. Field Test Procedure

Field Performance Test of the Belt-Conveyor Scale

~~**N.2.1. Initial Verification. A belt-conveyor scale system shall be tested at the normal use flow rate, 35 % of the maximum rated capacity, and an intermediate flow rate between these two points. The system may also be tested at any other rate of flow that may be used at the installation.**~~
~~**(Added 2004)**~~

N.2.1. Initial Verification. – A belt-conveyor scale system shall be verified with a minimum of two test runs at each of the following flow rates:

(a) normal use flow rate;

(b) 35 % of the maximum rated capacity; and

(c) an intermediate flow rate between these two points.

Discussion/Conclusion: The sector agreed to recommend the proposed amendments to Pub 14 BCS Section 13. In addition, the members also recommend that a note (as shown below) for Section 13 be **added** to clarify that the site identified for conducting the field permanence test portion of the type evaluation shall be capable of providing tests at various flow rates.

Note: The test site selected for permanence testing shall be capable of testing over a range of flow rates. Any site where the belt-conveyor scale system is limited to a single flow rate will not be considered acceptable.

4. Handbook 44, T.1.1. (S&T Committee agenda Item 321-6)

Background: At the 2009 NCWM Annual Meeting, the Conference adopted an amendment to paragraph T.1.1. Tolerance Values. to clarify the allowable change in zero during an official test. Background information on the amendments to HB 44 may be found in the S&T Committee 2009 Interim Report.

Recommendation: The Technical Advisor recommended that no action is necessary because the amendments to HB 44 requirements shown above are applicable to subsequent field examinations, are not referenced explicitly in Pub 14, and do not apply to type approval test procedures.

Discussion/Conclusion: Sector members agreed with the Technical Advisor's recommendation that no further actions are required.

5. Handbook 44, Sections N.3.1.2., N.3.1.3., and S.3.3.1.

Background: At the 2009 NCWM Annual Meeting, the Conference adopted amendments to paragraphs N.3.1.2., N.3.1.3., N.3.1.4., and to add new paragraph S.3.1.1. in order to:

- Consolidate the requirements in N.3.1.2. and N.3.1.3.;
- Clarify the testing guidelines in N.3.1.3.;
- Renumber the impacted paragraphs; and
- Add a new paragraph to state that the zero balance condition shall not be obscured by the automatic zero-setting mechanism.

Recommendation: The technical advisor recommended that references in Pub 14, pages BCS-16 be amended to reflect the consolidation and renumbering of the paragraphs as shown below:

13. Field Test Procedure

~~**N.3.1.2. Initial Stable Zero. – The conveyor system shall be run to warm up the belt and the belt scale shall be zero-adjusted as required. A series of zero-load tests shall be carried out until three consecutive zero-load tests each indicate an error which does not exceed ± 0.06 %**~~

~~**of the totalized load at full scale capacity for the duration of the test. No adjustments can be made during the three consecutive zero-load test readings.**~~

~~**(Added 2002) (Amended 2004)**~~

N.3.1.~~3~~2. Test of Zero Stability. – The conveyor system shall be operated to warm up the belt and the belt scale shall be zero adjusted as required. A series of zero-load tests shall be carried out **before weighing material** immediately before the simulated or materials test until the three consecutive zero-load tests each indicate an error which does not exceed ± 0.06 % of the totalized load at full scale capacity for the duration of test. No adjustments can be made during the three consecutive zero-load test readings.
(Added 2002) (Amended 2004 **and 2009**)

N.3.1.43. Check For Consistency of the Conveyor Belt Along Its Entire Length. – After a zero-load test with flow rate filtering disabled, the totalizer shall not change more than plus or minus (± 3 d) 3.0 scale divisions from its initial indication during one complete belt revolution.
(Added 2002) (Amended 2004)

The technical advisor also recommended adding the following language to Publication 14 page BCS-7:

6. Zero-Setting Mechanism

Code Reference: S.3.1. **and S.3.1.1.**

6.3. The completion of the automatic zero-setting operation must be indicated. Yes ☐ No ☐ N/A ☐

6.3.1. Verify that any changes in the zero reference are indicated and/or recorded **Yes ☐ No ☐ N/A ☐**

Discussion/Conclusion: The Sector members agreed with the proposed changes and recommended that NCWM Publication 14 be amended as shown above.

B. Proposed Update to NCWM Publication 14 Belt-Scale Checklist

Background: During the February 2009 BCS Sector meeting, a draft Pub 14 checklist was developed and offered for use on a trial basis by the National Type Evaluation Program (NTEP) labs that would evaluate manufacturer's replacement instruments. During the meeting, Sector Chairman, Mr. Bill Ripka, Thermo-Fisher, stated that Thermo-Fisher would possibly have an instrument that would be submitted in the near future to undergo the NTEP process. This checklist could then be used on this instrument as a trial basis. The results/comments would then be returned to NTEP Administrator and Sector work group (WG) for review and further development. The entire draft checklist may be found in the 2009 NTETC Belt-Conveyor Scale Sector meeting summary.

Discussion: Based on information provided by NTEP Administrator Mr. Jim Truex, the Sector members were informed that NTEP had not received an instrument from any manufacturer to use as a trial for the checklist that has been drafted. Mr. Lars Marmsater indicated that Merrick Industries will be submitting an indicator to update its NTEP Certificate of Conformance (CC).

Conclusion: NTEP Administrator, Mr. Truex, indicated that the California NTEP Lab would perform the evaluation when the device is submitted and that the sector will be provided with a report from the NTEP lab for any recommendations to approve or amend the proposed checklist. Sector members agreed that no further work is needed to the checklist at this time, pending a report from NTEP, after applying the draft to the evaluation of an instrument. This item will be carried over and placed on the next meeting agenda of the NTETC BCS Sector.

C. Develop a List of Sealable Parameters for BCS Systems

Background: The list shown below was developed during the 2009 NTETC BCS Sector meeting, and was to be forwarded to NTEP laboratories for use on a trial basis after which comments and recommended amendments would be forwarded to the Sector WG for further development. The technical advisor reported to the members that no manufacturers' devices have been submitted for NTEP approval; therefore, the list has not been used during any evaluations.

Discussion/Conclusion: Sector members agreed that no further amendments to the table are needed at this time, and that the table should be incorporated in the 2011 edition of Pub 14.

Belt-Conveyor Scale Features and Parameters

Typical Features to be Sealed	Typical Features and Parameters Not Required to be Sealed
Official verification zero reference	Display update rate
Official verification span/calibration reference	Baud rate for electronic data transfer
Linearity correction values	Communications (Configuration of input, output signal to peripheral devices)
Allowable range of zero (if adjustable)	
Selection of measurement units	
Division value, d	
Range of over capacity indications (if it can be set to extend beyond regulatory limits)	
Alarm limits for flow rate (high/low)	
Automatic zero-setting mechanism (on/off)	
Automatic zero-setting mechanism (range of a single step)	
Configuration (speed, capacity, calibrated test weight value if applicable, pulses per belt revolution, load cell configuration)	

NOTE: *The above examples of adjustments, parameters, and features to be sealed are to be considered "typical" or "normal." This list may not be all inclusive, and there may be parameters other than those listed which affect the metrological performance of the device and must, therefore, be sealed. If listed parameters or other parameters which may affect the metrological function of the device are not sealed, the manufacturer must demonstrate that the parameter will not affect the metrological performance of the device (i.e., all settings comply with the most stringent requirements of HB 44 for the applications for which the device is to be used).*

D. New Business

1. Revisit parameters used to categorize "Family" groups

Mr. Steve Cook, NIST, recommended that the Sector review and revise if necessary the criteria used to base the grouping of instruments submitted for type evaluation as a Family or Type of devices. This topic is recommended to be included on the next NTETC Belt-Conveyor Scale Sector Meeting Agenda.

E. Attendance

2010 NTETC Belt-Conveyor Scale Sector Meeting Attendance

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APPENDIX F

Mutual Recognition Arrangement between Canada and the National Conference on Weights and Measures

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Mutual Recognition Arrangement

MADE ON 19TH DAY OF JULY 2011

BETWEEN:

Canada

Measurement Canada
AN AGENCY OF INDUSTRY CANADA
STANDARDS BUILDING
151 TUNNEY'S PASTURE DRIVEWAY
OTTAWA, ONTARIO, CANADA, K1A 0C9

AND

the National Conference on Weights and Measures, Inc.

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UNITED STATES

1. PURPOSE

The Purpose of this Mutual Recognition Arrangement (MRA) is to establish a working relationship to implement a voluntary program for the mutual recognition of the device evaluations administered and performed by Measurement Canada (MC), a special operating agency of Industry Canada, and the National Type Evaluation Program (NTEP) of the National Conference on Weights and Measures, Inc. (NCWM) of the United States.

2. BACKGROUND

MC and NCWM operate ongoing type evaluation systems for commercial weighing and measuring devices. Canada, many states and several U.S. Federal agencies require the evaluation and approval of the design and performance of device prototypes prior to their sale for commercial use.

Rather than submitting commercial devices for the United States market to NTEP laboratories and essentially the same devices for the Canadian market to the MC's Approval Services Laboratories, manufacturers requested that United States and Canada (1) combine their evaluation tests and (2) recognize either NTEP laboratory or MC laboratory results of the combined evaluation as the basis upon which NTEP and MC would each issue their evaluation documents (either the NTEP Certificate of Conformance or the Canadian Notice of Approval). Expected benefits include: increase uniformity of test methods reducing unnecessary differences, misunderstandings, and unnecessary duplications; reduced cost and improved turn-around time by accessing a single source for type evaluation for both countries; increased competitiveness for both U.S. and Canadian manufacturers by accelerating the time from design to the end markets.

The following policy was adopted in January 1993 by the National Conference on Weights and Measures (predecessor to the National Conference on Weights and Measures Inc.) in concert with Measurement Canada (then known as Legal Metrology Branch):

"With respect to weights and measures devices, the parties agree that the most effective means to remove barriers to free trade is to achieve mutual recognition of device type evaluation testing. This necessarily involve the comparative analysis of type evaluation codes and test procedures together with the intent of streamlining and minimizing differences in so far as possible so as to enable efficient device evaluation while preserving the technical capability and competence of their mutual laboratories."

3. ARRANGEMENT

The United States National Type Evaluation Program (NTEP) of the National Conference on Weights and Measures Inc. (NCWM) and Measurement Canada (MC) agree to recognize each other's type evaluation results:

NCWM will recognize the results of the tests performed by MC for the purpose of issuing NTEP Certificates of Conformance for device types set out in the annex A and B to this arrangement.

MC will recognize the results of the tests conducted by NTEP Participating Laboratories for the purpose of issuing a Canadian Notice of Approval for the devices types set out in the annex A to this arrangement.

Each party will continue to issue its own document (either the NTEP Certificate of Conformance or the Canadian Notice of Approval).

4. COLLABORATION

Both parties will collaborate to eliminate or minimize differences in requirements and test methods so as to enable efficient devices evaluation.

Each party will:

Make all information available to the other party, maintaining confidentiality of proprietary information;
- Collaborate in the development of additional areas of mutual recognition;
- Collaborate in the development of requirements and tests methods for commercial devices and systems;
- Collaborate in the development and maintenance of proficiency and uniformity of evaluation; and
- Collaborate to preserve the technical capability and competence of their mutual laboratories.

5. RESOLUTION OF COMPLAINTS

This MRA does not create binding obligations under international law. However, each party will investigate complaints that the other party brings forward, and both parties will work together to seek satisfactory resolution of such complaints.

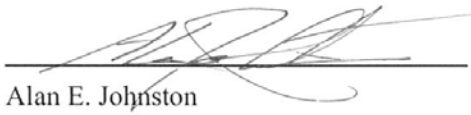
6. DURATION AND TERMINATION

This MRA will become effective on July 19, 2011. It will remain in effect for a period of five (5) years and may be extended by mutual consent. This MRA may be terminated at any time by either party upon six (6) months written notice to the other party.

7. APPLICATION FOR TYPE APPROVAL

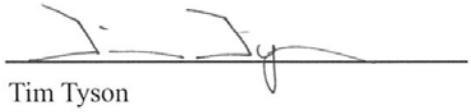
Under this arrangement, any applicant for type approval is free to apply to either country when requesting type approval in both countries.

For Measurement Canada



Alan E. Johnston
President

For the National Conference on Weights and Measures



Tim Tyson
Chairman

ANNEX A
MUTUAL RECOGNITION ARRANGEMENT

Devices for which NCWM and MC will recognize the results of the tests performed at the NTEP Participating Laboratories or MC Laboratory for the purpose of issuing NTEP Certificates of Conformance (USA) and Canadian Notice of Approval:

1. Electronic weight indicating elements (except those that are "software based" i.e. programmed by downloading parameters);
2. Electronic computing and non-computing bench, counter, floor and platform scales up to 1000 kg (2000 lb) capacity;
3. Weighing / load receiving elements with capacities up to 1000 kg (2000 lb); and
4. Mechanical scales with capacities not exceeding 10 000 kg (20 000 lb).

ANNEX B
MUTUAL RECOGNITION ARRANGEMENT

Devices for which NCWM will recognize the results of the tests performed by MC for the purpose of issuing NTEP Certificates of Conformance:

1. Gasoline Dispensers;
2. High-Speed Refuellers; and
3. Electronic Registers for Dispensers.

Note: MC will provide NTEP with results of evaluations and tests for compliance to the Canadian requirements using Canadian work sheets and will perform and provide the results of additional evaluations and tests for compliance to the NTEP requirements as per the list below:

Reference to NCWM Publication 14 (most recent edition) Liquid Measuring Device Check List

Sections 1.1 to 1.3	Device Identification;
Sections 1.16 and 12	Totalizers;
Sections 7.3 to 7.17	Agreement of registration;
Sections 7.18 to 7.21	Credit Card-or Debit Card-Activated Retail Motor-Fuel Dispenser;
Section 7.22	Money Value Divisions, Digital;
Sections 7.37 to 7.39	Display of Unit Price;
Section 7.40	Display of Product Identity;
Section 15, 16 and 17	Card-Activated Retail Motor-Fuel Dispensers and Cash-Activated Retail Motor-Fuel Dispensers.

The Report of the Nominating Committee

Randy Jennings, Chairman
Executive Assistant
Tennessee Department of Agriculture

The Nominating Committee met during the Interim Meeting at the Fairmont Dallas, Dallas, Texas, at which time the Committee nominated the persons listed below to be officers of the 97th National Conference on Weights and Measures. In the selection of nominees from the active and associate membership, consideration was given to professional experience, qualifications of individuals, conference attendance and participation, and other factors considered to be important.

The following slate of officers was selected by a unanimous vote of the Nominating Committee and elected by a unanimous vote of membership at the 96th National Conference on Weights and Measures.

CHAIRMAN-ELECT:	Mr. Stephen Benjamin, North Carolina Department of Agriculture
BOARD OF DIRECTORS SOUTHERN REGION:	Mr. Terence McBride, Memphis, Tennessee Weights and Measures
BOARD OF DIRECTORS AT LARGE:	Mr. John Gaccione, Westchester County, New York Weights and Measures
TREASURER:	Mr. Mark Coyne, Brockton, Massachusetts Weights and Measures

---

Mr. Randy Jennings, Tennessee, Chairman

Ms. Judy Cardin, Wisconsin
Mr. Charles Carroll, Massachusetts
Mr. Tom Geiler, Barnstable, Massachusetts
Mr. Joe Gomez, New Mexico
Mr. Maxwell Gray, Florida
Mr. Steve Malone, Nebraska

Nominating Committee

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2011 Annual Meeting Final Attendee List
July 17-21, 2011 / Missoula, Montana

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2011 Annual Meeting Final Attendee List
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