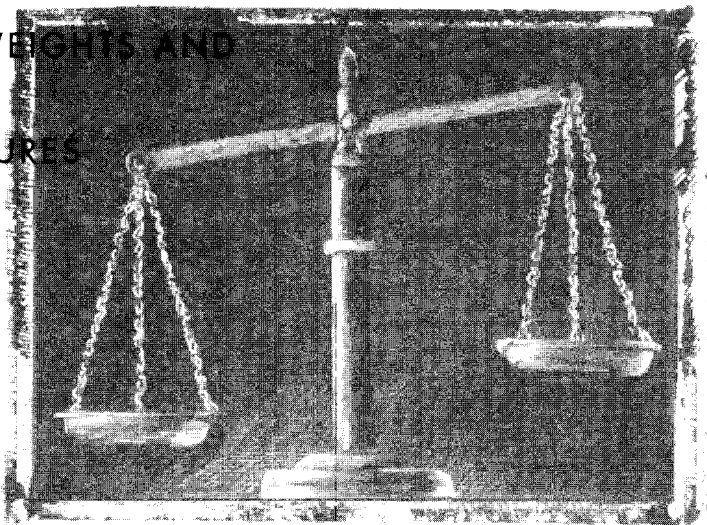




NIST
National Institute of
Standards and Technology
Technology Administration
U.S. Department of Commerce

REPORT OF THE 85TH
NATIONAL CONFERENCE
ON WEIGHTS AND
MEASURES



as adopted by the 85th
National Conference on
Weights and Measures 2000



NIST Special
Publication **957**
2000



Report of the 85th National Conference on Weights and Measures

Supported by the National Institute of Standards and Technology (NIST)

Attended by Officials from the Various States, Counties, and Cities, and
Representatives from U.S. Government, Industry, and Consumer Organizations

Richmond, Virginia - July 16 - 20, 2000

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NIST
Special Publication **957**

November 2000

Abstract

The 85th Annual Meeting of the National Conference on Weights and Measures (NCWM) was held July 16 through 20, 2000, at the Omni Richmond Hotel in Richmond, VA. The theme of the meeting was "Basic Standards -- Building the Foundation for a New Millennium."

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, the Industry Committee on Packaging and Labeling, Associate Membership Committee, and Metrology Subcommittee.

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

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Note: The policy of the National Institute of Standards and Technology is to use metric units of measurement in all of its publications. In this publication, however, recommendations received by the NCWM technical committees have been printed as they were submitted and, therefore, may contain references to inch-pound units where such units are commonly used in industry practice. Opinions expressed in non-NIST papers are those of the authors and not necessarily those of the National Institute of Standards and Technology. Non-NIST speakers are solely responsible for the content and quality of their material.

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Past Chairmen of the Conference

Conference	Year	Chairman
43rd	1958	J. P. McBride, MA
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, Suffolk Co., NY
82nd	1997	Barbara J. Bloch, CA
83rd	1998	Steven A. Malone, NE
84th	1999	Aves D. Thompson, AK

The following designated State Representatives were present and voted on reports presented by the Conference Standing and Annual Committees.

2000 STATE VOTING REPRESENTATIVES

State	Representative
Alabama	Steadman L. Hollis
Alaska	Aves D. Thompson
American Samoa	Silimusa Solomona
Arizona	Dennis E. Ehrhart
Arkansas	Mike Hile
California	Mike Cleary
Colorado	None
Connecticut	None
Delaware	William Lagemann
District of Columbia	None
Florida	Jack Y. Jeffries
Georgia	Jerry Flanders
Guam	None
Hawaii	None
Idaho	Tom W. Schafer
Illinois	Sidney A. Colbrook
Indiana	J. Stump
Iowa	Darryl Brown
Kansas	Constantine V. Cotsoradis
Kentucky	Larry Hatfield
Louisiana	None
Maine	Harold Prince
Maryland	Louis E. Straub
Massachusetts	Charles H. Carroll
Michigan	Patrick J. Mercer
Minnesota	Mark Buccelli
Mississippi	Russell E. Robbins
Missouri	Steve P. Gill
Montana	Jack Kane
Nebraska	Steven A. Malone
Nevada	None
New Hampshire	Michael F. Grenier
New Jersey	Louis E. Greenleaf
New Mexico	Gary D. West
New York	Ross J. Andersen
North Carolina	N. David Smith
North Dakota	None

State Voting Representatives

Ohio	Leonard J. Hubert
Oklahoma	Charles D. Carter
Oregon	George S. Shefcheck
Pennsylvania	Charles M. Bruckner
Puerto Rico	Jose Torres-Ferrer
Rhode Island	None
South Carolina	Carol P. Fulmer
South Dakota	Joe Hjermstad
Tennessee	Robert G. Williams
Texas	Edwin J. Price
Utah	Brett Gurney
Vermont	Raymond P. Cioffi
Virginia	J. Alan Rogers
Virgin Islands	None
Washington	Gerald A. Buendel
West Virginia	Stephen Casto
Wisconsin	Eileen Pierce
Wyoming	None

National Conference on Weights and Measures, Inc., Organization Chart 1999-2000

Board of Directors (BOD)		
Office/Representation	Name & Affiliation	Term Ends
Chairman:	G.W. Diggs, VA*	
Chairman-Elect:	L. Straub, MD*	
Past Chair/NTEP Committee Chair:	A. Thompson, AK*	
Treasurer:	J. A. Rogers, VA* ^F	
Active Membership/Northeastern:	R. Andersen, NY*	2004
Active Membership/Central:	S. Malone, NE*	2000
Active Membership/Southern:	M. Hile, AR*	2003
Active Membership/Western:	G. West, NM*	2002
At-Large:	M. Pinagel, MI ^F	2003
At-Large:	R. Murdock, NC	2001
Associate Membership:	R. Davis, Fort James Corporation	2001
*National Type Evaluation Program (NTEP) Committee Member		
^F Finance Committee Member		
See Working Groups, Subcommittees, and Special Committees of the BOD after the Standing Committees.		
Honorary NCWM President:	R. Kammer, NIST Director	
NCWM Executive Secretary:	H. Oppermann, NIST Office of Weights and Measures	
BOD Advisors:	J. Koenig, NIST Office of Weights and Measures	
	B. Palys, CAE, Executive Director, NCWM Headquarters	
	G. Vinet, Canada	
NTEP Committee Technical Advisor:	T. Butcher, NIST Office of Weights and Measures	
Laws & Regulations Committee		
Chairman:	S. Morrison, San Luis Obispo Co., CA (1)	
Members:	P. D'Errico, NJ (3)	
	D. Johannes, CA (5)	
	D. Onwiler, NE (4)	
	R. Williams, TN (2)	
NIST Technical Advisor:	T. Coleman	
Canadian Tech. Advisors:	S. Dupras	
	J. Watters	
Associate Member Rep.:	C. Guay, Procter & Gamble Co.	
Petroleum Subcommittee		
Chairman & Tech Advisor:	R. Jennings, TN	
NIST Handbook 133 Working Group		
Chairman:	B. Bloch, CA	
Specifications & Tolerances Committee		
Chairman:	M. Hopper, Kern Co., CA (1)	
Members:	C. Cotsoradis, KS (5)	
	M. Coyne, Brockton, MA (3)	
	G. Shefcheck, OR (2)	
	R.W. Woithlie, MD (4)	
NIST Technical Advisor:	J. Williams	
Canadian Tech. Advisor:	T. Kingsbury	
Multiple Dimension Measuring Devices Working Group		
Chairman:	C. Skonberg, United Parcel Service	
Technical Advisor:	R. Suiter, NIST	
Remanufactured Devices Task Force		
Chairman:	J. Truex, OH	

Organization Chart

<p>Administration & Public Affairs Committee</p> <p>Chairman: J. Flanders, GA (3) Members: D. Frieders, San Francisco Co., CA (4) L. Greenleaf, NJ (1) S. Hadder, FL (5) Vacant (2)</p> <p>NIST Technical Advisors: J. Land and L. Sebring Associate Member Rep.: B. Fuehne, Ralston Purina Co. NCWM Safety Liaison: C. Gardner, Suffolk Co., NY</p> <p>Voluntary Program Assessment Working Group Chairman: S. Colbrook, IL</p>	
<p style="text-align: center;">Metrology Subcommittee</p> <p>Chairman: R. Balaze, MI Vice Chairman: K. Fraley, OK Members: L. F. Eason, NC J. Rothleder, CA D. Newcombe, ME J. Torres, PR</p> <p>Technical Advisor: G. Harris, NIST</p>	<p style="text-align: center;">Nominating Committee</p> <p>Chairman: A. Thompson, AK Members: B. Bloch, CA S. Colbrook, IL C. Gardner, Suffolk Co., NY T. Geiler, Barnstable, MA N. D. Smith, NC Jim Truex, OH</p>
<p style="text-align: center;">Legislative Liaison</p> <p>Chairman: T. Geiler, Barnstable, MA Members: W. Corey, American Frozen Foods N. D. Smith, NC</p>	<p style="text-align: center;">Resolutions Committee</p> <p>Chairman: J. Tillson, MS (1) Members: C. Kloos, Colgate-Palmolive (2) R. Alviene, NJ (3)</p>
<p style="text-align: center;">Handbook 44 Working Group</p> <p>Chairman: R. Murdock, NC</p>	<p>Coordinator: L. DiTizio</p>
<p style="text-align: center;">Credentials Committee</p> <p>Chairman: H. Hochstetler, Elkhart Co., IN (1) Members: T. Lori, NJ (2) J. Bates, VA, (3)</p> <p>Coordinator: L. DiTizio</p>	<p style="text-align: center;">Other Appointed Officers</p> <p>Parliamentarian: B. Adams, MN Chaplain: M. Hile, AR Sergeants-At-Arms: Ran Musser, VA Vernon Massey, Shelby County, TN</p> <p>Presiding Officers: C. Cooney, OR C. Fulmer, SC L. Hatfield, KY C. Bruckner, PA</p>

Associate Membership Committee

Chairman: F. Holland, Southern Enterprises (1)
 Vice Chair: A. Nelson, NW Associates (5)
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 Treasurer: C. Frye, International Dairy Foods
 Association (4)
 Members: J. Baker, Pier 1 Imports (3)
 D. Cook, Kraft Foods, Inc. (3)
 D. Flocken, Mettler-Toledo (4)
 C. Guay, Procter & Gamble Company (2)
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 V. Orr, ConAgra Refrigerated Prepared Foods (5)
 D. Quinn, Fairbanks Scales (1)

**Regional Weights and Measures Association Contacts
 for Membership Information**

Northeastern Weights and Measures Assn. (NEWMA):	William Wilson, Clinton Co., NY, Secretary
Southern Weights and Measures Assn. (SWMA):	N. David Smith, NC, Secretary/Treasurer
Central Weights and Measures Assn. (CWMA):	Renee Osterkamp, SD, Executive Secretary
Western Weights and Measures Assn. (WWMA):	Charles Green, NM - Retired, Secretary/Treasurer 840 Camino Del Rex Las Cruces, NM 88001 Telephone: 505-523-0730

**National Type Evaluation Program
Technical Committee**

Weighing Sector

Chair: N. Mills, Hobart Corporation

Technical

Advisor: R. Suiter, NIST

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D. Tonini, Scale Manufacturers
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R. Murdock, NC
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W. West, OH
R. Wothlie, MD

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R. Cooper, Schlumberger (Neptune)
C. Eskind, Shell Oil Company/API
R. Fonger, Bennett Pump Co.
M. Hankel, MCH Engineering
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D. Smith, Gasboy International, Inc.
R. Traettino, Liquid Controls Corp.
O. Warnlof, Consultant
K. White, Brooks Instrument Div.

<p style="text-align: center;">Belt Conveyor Scales Sector</p> <p>Chair: P. Chase, Consultant</p> <p>Technical Advisor: R. Suiter, NIST</p> <p>Public Sector Members:</p> <ul style="list-style-type: none"> A. Buie, MD T. Butcher, NIST S. Cook, CA R. Miller, CO L. Turberville, AL <p>Private Sector Members:</p> <ul style="list-style-type: none"> K. Alexeff, Stock Equipment Co. W. Brasher, Southern Co. Services G. Burger, Consultant L. Burrow, Sensortronics M. Casanova, Ramsey Technology L. Cerny, Association of American Railroads P. Chase, Chase Technology, Inc. D. Cockrell, Consultant R. DeSollar, Central Illinois Public Service Company R. Dietrich, Kaskaskia Valley Scale S. Hawkins, ABC Scale T. Johnson, Sensortronics K. Knapp, Milltronics F. Joe Loyd, CSX Transportation J. Oliver, Virginia Power N. Ortyl, III, Dresser Industries B. Ripka, Ramsey Technology, Inc. P. Sanford, Thayer Scale D. Tonini, Scale Manufacturers Association T. Vormittag, Sr, Commercial Testing & Engineering Co. O. Warnlof, Consultant 	<p style="text-align: center;">Grain Moisture Meter Sector and Near-Infrared Protein Analyzer Sector</p> <p>Chair: R.W. Wothlie, MD</p> <p>Technical Advisors:</p> <ul style="list-style-type: none"> J. W. Barber, J B Associates G. D. Lee, NIST <p>Public Sector Members:</p> <ul style="list-style-type: none"> Canadian Grain Commission R. Burns, AR D. Funk, GIPSA D. Onwiler, NE R. Pierce, GIPSA J. Rothleder, CA C. Tew, NC R. Wittenberger, MO <p>Private Sector Members:</p> <ul style="list-style-type: none"> J. Bair, Millers National Federation T. Conwell, CSC Scientific Company, Inc. M. Clements, The Steinlite Corp. C. Eigenmann, DICKEY-john Corp. M. Hall, Sartorius Instruments C. Hurburgh, Jr., Iowa State University D. Krejci, Grain Elevator & Processing Society* R. Oberg, Zeltex, Inc. T. O'Connor, National Grain & Feed Association O. Rasmussen, Foss North America, Inc.* T. Runyon, Seedboro Equipment F. Seeber, Shore Sales Co., Grain Elevator & Processors Society C. Watson, Consultant H. Yamahira, Kett Electric Laboratory <p style="text-align: center;">*(Grain Moisture Meter Sector only)</p>
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Special Address

Richard F. Kayser, Director of Technology Services, National Institute of Standards and Technology, addressed the Conference July 18, 2000, at the General Session. He presented the following slides during his address. Mr. Kayser spoke from notes, and his remarks were not recorded; therefore, a complete text copy of his remarks was not available for this publication.

NIST-NCWM

President's Address
Richard F. Kayser
Director, Technology Services


85th Annual Meeting of the National
Conference on Weights and Measures
July 18, 2000
Richmond, VA

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

2001 - The 100th Anniversary of NIST

- NCWM meets in Washington, DC, in 2001
- State Metrologists plan a combined regional meeting at NIST
- Centennial Book on Significant NIST Publications includes reference to NCWM Reports, Handbooks 130 & 44.



NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

Update on NIST Staff

- Gil Uglansky named Deputy Director of Office of Measurement Services
- Henry Oppermann named Chief of the Office of Weights and Measures
- Charles Ehrlich has assumed responsibility for activities related to the International Organization of Legal Metrology (OIML)

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

Update on Projects in Process - NTEP Transition

- NIST/OWM staff have been meeting with NCWM Representatives
- NIST and NCWM leadership have defined the roles that each will play in NTEP in the future
- Time-line for transition milestones has been established

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

NTEP Transition - NCWM's Role

- Administration of program and processes including:
 - Technically reviewing NTEP applications and making decisions on type approvals
 - Drafting and reviewing NTEP certificates
 - Answering routine administrative and technical questions
 - Authorizing laboratories to perform NTEP testing (with technical input from NIST)
 - Formatting and publishing type evaluation checklists

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

NTEP Transition - NIST's Role

- Technical Support including:
 - Serving as a technical resource to the NTEP Labs
 - Providing technical input on questions arising in type evaluations
 - Participating in the NTEP Lab authorization process
 - Serving as technical advisors to the NTEP Sectors
 - Working with Labs on some evaluations
- NIST/OWM will not be an NTEP Lab

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

NTEP Transition - Time-Line

- NIST/OWM developed detailed time-lines to help facilitate the transition
- Key dates include:
 - August 1, 2000 - Draft Certificates of Conformance (CCs) received before this date will be issued by NIST
 - September 1 - New applications should be sent to NCWM
 - October 1 - NCWM assumes full responsibility for NTEP - CCs issued after this date will be NCWM CCs

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM


Update on Projects In Process - MEASUREnet-gov

- Provided necessary software and hardware to 11 Pivot Labs
- Conducted training in January
- Began pilot testing via point to point connections

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

MEASUREnet-gov: Initial Participants



NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

Update on Projects In Process - MEASUREnet-gov

- Created a web site:
<http://www.nist.gov/measurenet-gov>
- Will give a demo of the system at this meeting

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

Update on Projects In Process - State Laboratory Accreditation

- 2 State Labs are currently accredited by NVLAP
- 10 State Labs have applied for accreditation in FY 2000
- Ray Kammer approved an addition of \$125K to OWM's base funding to continue the accreditation program in future years
- Technology Services will pay costs over \$125K

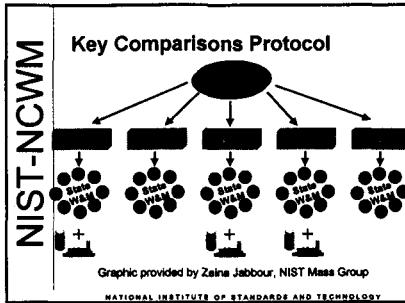
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

Update on Projects In Process - National Key Comparison Project

- NIST Mass Group, OWM, & the States are conducting a national key comparison of mass standards
- Weight sets are circulating to all of the State labs during 2000

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY



NIST-NCWM

Update on Projects in Process - Weights and Measures Initiative

- NIST has submitted a weights and measures initiative for FY 2002
- Current proposal is for \$5.4 M
- Scope of proposal:
 - Technical Assistance (including training)
 - Educational Facility and Equipment
 - Research Program
 - Regular Calibration of State Primary Standards
- Reflects OWM's future plans

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

New Directions

- OWM has developed a 3-year plan with the following critical elements:
 - Strategic Planning
 - Technical Assistance
 - Technical Studies
 - Measurement of Effectiveness
- We want your feedback on the ideas presented

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

Strategic Planning

- Hold program review meetings with focus groups
- Develop a strategic training plan
- Develop the concept of an "Ideal Weights and Measures Program"

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

Technical Assistance

- Develop Technology Based Training courses
- Find ways to better use Information Technology to achieve objectives
- Develop products for different audiences
- Develop training for W&M Administrators

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM

Technical Studies

- Investigate technical issues of concern to the W&M Community
 - Informal discussion of e-commerce and related W&M issues
 - Technical studies related to instruments to measure fat on carcasses
- Equipment or statistical models to help W&M to be more efficient
 - Liquid densimeters for package checking
 - Statistical sampling for device inspection

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

NIST-NCWM	Measure Effectiveness
	<ul style="list-style-type: none">■ Develop ways of measuring:<ul style="list-style-type: none">● NIST's effectiveness in getting uniformity in W&M laws, regulations, standards, and practices● The effectiveness of the W&M system in the United States■ Use information gathered to allocate NIST resources
<small>NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY</small>	

Chairman's Address to the 85th Annual Meeting 2000

**Presented by G. Weston Diggs
Virginia Office of Product and Industry Standards**

It has been my privilege to serve as your Chairman for the past year. As you know, we have faced many challenges since last July, and I believe the Board of Directors has done a commendable job in meeting the challenges that have come before them. At this point, I might add that our task has been made easier because of the support given to us by our NCWM staff, our industry members, and the technical staff at the Office of Weights and Measures (OWM); it has been greatly appreciated.

One of my goals as Conference Chairman was to reorganize and rewrite the National Institute of Standards and Technology (NIST) Handbook 44. With the leadership of Ron Murdock, specific recommendations are being made by his committee for the reorganization. These recommendations will be open for discussion and comment. However, the greatest challenge, which is to rewrite H-44 so that it can be better understood by its users, is yet to come. Based on the comments that I have received from weights and measures officials, industry, and service technicians, this must remain a high priority project.

We are a standards development organization and the product of our work is reflected in the model laws published in the various NIST/NCWM handbooks produced by the Conference. Over the past several years, NIST and the Conference have wrestled with the issue of ownership and copyright of these publications. This has been a real "hot button" issue on both sides. The Conference wants to protect the publications from misuse and also have some control over how and by whom they are distributed. From the NIST prospective, they believe if the handbooks are copyrighted, it would inhibit their ability to use them in fulfilling their mission of uniformity of weights and measures in the United States. A possible solution to our dilemma was suggested by Aves Thompson of Alaska. Why doesn't the Conference enhance the handbooks like some of the industry has done for years? Take for example, Handbook 44. Why not add the Examination Procedure Outlines, create a handbook version for scale users, and create another handbook for those only interested in pumps and meters? Generally, only weights and measures officials would be interested in a handbook with all of its sections. Without copyrighting NIST Handbook 44, the Conference's enhanced handbook could be copyrighted and sold. This is an option worth exploring.

In 1998 at the 83rd Annual Meeting, the Conference voted in new bylaws that changed the make-up of the Conference and had a far-reaching impact that most of us never envisioned. Let me say at this point, we made the right decision. In fact, I believe it was the only decision we could have made.

Let me talk about some of the effects the adoption of the bylaws has had. One of the most apparent changes is our relationship with NIST and its Office of Weights and Measures. We must keep in mind that we are a 501-C3 not-for-profit corporation. This IRS tax classification, and the fact that we are now incorporated, automatically changed the relationship between the two organizations. In previous years, the staff at the OWM accepted the responsibility of making many business decisions for the Conference and ran its day-to-day operation. Now the Executive Committee is the Board of Directors, and in addition to there being a Chairman of the Conference, we now have a Chairman of the Board. Our Conference has income and expenses totaling more than 1.3 million dollars annually. More and more of the Board's time is being spent on financial matters and exercising fiscal responsibility.

I would add at this point, the direction the Conference has charted in recent years has been a result of some of the policies adopted by the leadership at NIST and OWM. Since last October, NIST has changed its direction in the names of Rich Kayser, Tom Gills, and Henry Oppermann. This may be the time to re-evaluate our long-term strategic plan. In some of my recent conversations with Tom Gills and Henry Oppermann, they have lead me to believe that they are more willing to revisit positions previously taken by both organizations. This doesn't mean we are going back to the way things were prior to 1998. OWM will not manage the Conference's business affairs and will not be involved in "production-meets-type" with the National Type Evaluation Program. However, at this point in time, we are all searching for roles that are appropriate and where our role can be the most effective in making our system of weights and measures the best in the world. Beginning now, we need to sit down together and better identify what those roles should be.

General Session

The last thing I would like to discuss is COMMITMENT. We realized NCWM, Inc., could not be run by part-time volunteers. In the fall of 1998, we selected and contracted with Management Solutions Plus to manage our day-to-day operations. I might add that our NCWM staff has done an outstanding job. One of their greatest challenges has been to get Board members to think as a whole rather than as part-time volunteers representing their individual State's interest. At this year's Interim Meeting, we were all able to attend a Board Governance Seminar to help us in that direction.

The Conference is starting to feel a strain on its resources. In this case, I am not speaking of money. I am talking about people and the fact that our people resources are part-time volunteers who have full-time jobs. The Conference is an organization that depends on its members to do its work and we charge them a \$200 registration fee to do it. One of the first things I came to realize after becoming Chairman, was how scarce our people resources were. A great many of those attending the Annual and Interim Meetings are looking to retirement in the near future. We have many younger members with potential, but we have not done a good job in identifying and developing them for future Conference leadership. To be involved in the Conference takes a major commitment on the part of the individual and the State or locality they represent. As Chairman, my time is not representative of most people's commitment, but through me, Virginia has invested more than 812 hours in the Conference since last July. In most cases, serving on a standing committee requires a 5-year commitment. Most States and localities have travel policies that restrict the number of people a jurisdiction may bring to an out-of-state meeting. Our best hope in developing our future leaders may be a mentoring program at the regional association meetings.

In closing, I would like to acknowledge a friend, who I consider a real weights and measures professional, Ken Butcher. The "Butcher Block" at OWM has finally been broken. Over the years, Ken has either been on, or served as technical advisor to, most of the Conference's standing committees. He and I have had some real differences of opinion on issues over the years but they were professional differences and never became personal. I think I was right some of the time and he was right just as many times if not more. For those who were in Chicago, who could forget the discussion on FDA's [Food and Drug Administration's] Proposed Regulation. I feel Ken has been a model in his commitment to the work of the Conference. In the end, none of us are irreplaceable, but replacing Ken Butcher, will be more difficult than most.

I want to thank you for the honor of allowing me to serve as your Chairman this year. I look forward to working with Lou in the coming year.

HONOR AWARDS

10 YEARS

Robert K. Feezor, Norfolk Southern Corp.
Georgia Harris, NIST Office of Weights and Measures
Gordon W. Johnson, Marconi Commerce Systems
Walter K. Tkachuk, Consultant

20 YEARS

Richard L. Davis, Fort James Corp.
Henry V. Oppermann, NIST Office of Weights and Measures
Charles A. Gardner, Suffolk County, NY Weights & Measures
Joe Rothleder, CA Division of Measurement Standards

25 YEARS

A. Raymond Daniels
Steven A. Malone, NE Division of Weights and Measures
Allan M. Nelson, NW Associates

Special Recognition Awards

The success of this Conference is the result of the dedication and hard work of many individual members. At the general session, the Conference recognized the work of the following members for their contributions over the past years within their respective committees and for their contributions to the National Conference in general.

Board of Directors

Steve Malone, NE
Alan Rogers, VA
Aves Thompson, AK

Laws and Regulations Committee

Stephen Morrison, CA

Specifications and Tolerances Committee

Monty Hopper, CA

Administration and Public Affairs Committee

Louis Greenleaf, NJ

Presiding Officers

Charles Bruckner, PA
Clark Cooney, OR
Larry Hatfield, KY
Carol Fulmer, SC

Sergeants-at-Arms

Vernon Lee Massey, TN
Ran Musser, VA

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Report of the Board of Directors

G. Weston Diggs, Chairman
Supervisor
VA Products and Industry Standards

Reference
Key Number

100 Introduction

This is the Report of the Board of Directors (BOD) for the 85th Annual Meeting of the National Conference on Weights and Measures (NCWM). The Report is based on the Interim Report offered in NCWM Publication 16, Committee Reports; the Addendum Sheets issued at the Annual Meeting; and actions taken by the membership at the Voting Sessions of the Annual Meeting.

This Report contains items related to the management of the NCWM (items in the 101 Series). Items addressed by the National Type Evaluation Program (NTEP) Committee (formerly the 102 Series), are in a separate report (see the 500 Series). Table A, which is an index of reference key items included in the report, lists the reference key number, title, and page number for each item. An "I" denotes issues that are reported for information. Items that have been withdrawn are marked with a "W." Table B lists the Appendices to the report, and Table C provides a summary of the results of the voting on the Committee's report in entirety.

Table A
Index to Reference Key Items

Reference Key No.	Title of Item	Page
101-1* I	Strategic Planning.....	3
101-2* W	NCWM Policies.....	3
101-3* I	Financial Report	3
101-4* I	Status of Training Grant and Metrology Training Funds	3
101-5* I	Associate Membership Committee Report.....	3
101-6 I	Organization, Appointments, and Assignments Status Report.....	5
101-7* I	Membership.....	5
101-8* I	Meetings, Annual and Interim, Future	6
101-9 I	Program, OWM and NIST	6
101-10 I	Program, International Organization of Legal Metrology.....	6
101-11* I	Special Committee on Legislative Liaison Status Report	7
101-12 I	Metrology Subcommittee Report	7
101-13* I	Mentoring Program	7
101-14 I	Service Technician Outreach.....	7
101-15* I	Copyright of NIST Handbooks by NCWM.....	7
101-16 I	Revision of NIST Handbook 44.....	7
101-17 I	Remanufactured Devices Task Force Status Report	8
101-18 I	National Type Evaluation Technical Committee Sector Meetings	8
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*National Institute of Standards and Technology staff members do not serve as technical advisors for these items.

Table B
Appendices

Appendix	Title	Reference Key No.	Page
A	NCWM, Inc., 2000 Strategic Plan	101-1.....	11
B	OIML Final Report	101-10.....	17
C	2000 Final Report of the Metrology Subcommittee	101-12.....	29
D	Handbook 44 Working Group Proposed Work Plan	101-16.....	33
E	Sample Joint Sector Meeting Agenda	101-18.....	34
F	NCWM Budget for Fiscal Year 2001	101-3.....	35

Table C
Voting Results

Reference Key No.	House of State Representatives		House of Delegates		Associate and Advisory Members		Results
	Yes	No	Yes	No	Yes	No	
100 (Report in its Entirety) Voice Vote	All Ayes	No Nays	All Ayes	No Nays	All Ayes	No Nays	Passed

Details of All Items

101-1 I Strategic Planning

Chairman-Elect Lou Straub updated the Board on the status of the NCWM, Inc., Strategic Plan. (See Appendix A for a detailed report.)

The items that are currently in progress include:

- Reorganization and rewriting of NIST Handbook 44.
- Take-over of administration of the National Type Evaluation Program by October 1, 2000.

The issues under consideration include:

- Copyright of handbooks and publications that are products of the Conference's efforts.

The items completed include:

- The membership year should coincide with the fiscal year.
- NCWM should not administer OWM Metrology Funds or Training Grants.
- Policy of Business versus Technical Issues.
- Developing a brochure telling the story of weights and measures in the United States and how the National Conference on Weights and Measures fits in the process.

The Board decided that 10 complimentary brochures would be sent to each State Director.

Next year, the Board plans to review NCWM's strategic plan and to consider how it relates to OWM's strategic plan.

101-2 W NCWM Policies

The Board has withdrawn this item for this year due to other priorities.

At the Annual Meeting, it was announced that the NCWM Headquarters Office is in the process of developing a Policy and Procedures Manual for the Board.

101-3 I Financial Report

Beth W. Palys, CAE, Executive Director of NCWM, Inc., provided the Board with a profit/loss statement. She also reported that an outside audit of the Conference's FY 98-99 finances by the independent accounting firm of Dembo, Jones, Healy, Pennington, & Ahalt, P.C. had been completed. The Board received copies of the audited financial statements.

See Appendix F for the NCWM's budget for fiscal year 2001.

101-4 I Status of Training Grant and Metrology Training Funds

NCWM, Inc., will no longer administer the Training Grant from NIST or the Metrology Training Funds. Beth W. Palys, CAE, reported that, in October 1999, the balance of Training Grant Funds, \$8,638, was returned to NIST. The remaining amount in the Metrology Training Fund in January 1999 was \$4,151.

At the 2000 Annual Meeting, Mrs. Palys said that all Metrology Training Funds had been spent and that NCWM will not collect any additional funds for metrology training activities.

101-5 I Associate Membership Committee Report

The Associate Membership Committee (AMC) met during the afternoon on January 20, 2000. Rich Philmon, Administration and Public Affairs Committee (A&P) Chairman, reviewed the status of the AMC scholarship awards. He said that he had

Board of Directors

received 73 requests for the 50 available \$500 scholarships. There was a discussion about developing guidelines and criteria for awarding these scholarships, as well as the need to increase awareness and promote use of the scholarship program.

Tom Geiler presented the newly developed NCWM brochure for use in promoting NCWM with legislative staff. This brochure was funded in part by AMC. The AMC commented that the brochure was professional and comprehensive.

Rich Davis reported on the activities of the NCWM Board of Directors. He explained that since the incorporation of NCWM, the Board is going through a learning process regarding its roles and responsibilities. The Board will act in general oversight and guidance of the Conference, delegating detailed responsibilities to the appropriate Standing Committees.

Chris Guay reported on issues pertaining to the Laws and Regulations Committee including revisions to Handbook 133 and debate on an emergency agenda item. He also reported on the continued outreach efforts to North and South America on the use and acceptance of NCWM programs, such as recognition of National Type Evaluation Program certificates.

Frances Holland and Allan Nelson reported on the activities of the A&P Committee.

The AMC financial statement was reviewed. It was suggested that the AMC work closely with the NCWM management firm to gain a better understanding of their accounting practices. The AMC also recommended adding a separate accounting line item for AMC scholarship funds rather than retaining this money in the AMC fund balance.

The AMC met during the afternoon of July 17 at the NCWM Annual Meeting. The financial report was reviewed. It was noted that the available AMC fund balance for 1999 had been misinterpreted. The committee did not realize that the \$10,000 commitment for the Legislative brochure had not yet been dispersed. This caused a \$10,000 over-allocation to last year's \$25,000 scholarship funds, and will result in a lack of funds for the coming year's scholarships. As a result, the AMC is unable to make scholarship awards during the upcoming year. The committee agreed that the current fund balance of \$1,100 be awarded as a grant for the development of the NCWM web page. Additionally, the committee is requesting greater assistance from the NCWM management firm for clarification of the AMC finances.

Rich Davis reported on the activities of the Board of Directors. He explained that changes regarding the make up and duties of the nominating committee are being explored. The Board also agreed to discontinue efforts to copyright Handbooks 44, 130, and 133. He reported that the new NTEP director will be hired and in place by the end of August and that the NCWM web will be completed soon.

Chris Guay reported on the issues pertaining to the Laws and Regulations Committee. The revisions to the 4th Edition of Handbook 133 should be completed by October 2000. Once a completed draft is available, it will be distributed to interested AMC members for their comments. It is intended that the proposed changes to HB-133 be considered at the 2001 Interim Meeting and voted for adoption during the 2001 Annual Meeting.

Bob Fuehne reported on the activities of the A & P Committee including the Board's request to develop minimum criteria for the weights and measures field inspectors that would include building criteria for a training and certification program. He also reported on development of the voluntary checklist/self-assessment for weighing and measuring devices and presentation being made on the checklist at the Annual Meeting.

Nominations were made and a vote was taken to fill the upcoming vacancies on the AMC Committee: Steve Langford, Cardinal Scale Manufacturing Company, and Jennifer Banks, National Air Transportation Association, will serve until 2005. The committee recognized that the AMC bylaws require the terms of two AMC members to expire each year and adjusted the term of Dave Cook, Kraft Foods, to expire on 2001 rather than 2002. The following AMC officers were elected:

Chairman:	A. Nelson, NW Associates (2004)
Vice Chair:	C. Frye, International Dairy Foods Assoc. (2003)
Secretary/Treasurer:	D. Flocken, Mettler Toledo (2003)

There was discussion that due to the upcoming expiration of Rich Davis's 3-year term as industry representative on the NCWM Board of Directors, it will be necessary to nominate a replacement. The AMC will seek interested parties to fill this position.

101-6 I Organization, Appointments, and Assignments Status Report

The following are appointments that NCWM Chairman Wes Diggs and NTEP Committee Chairman Aves Thompson had made as of January 31, 2000:

Board of Directors:

Ron Murdock, NC, for 2 years replacing Lou Straub, who moved to the Chairman-Elect position
 Steve Malone, NE, for 1 year replacing Barbara DeSalvo

Presiding Officers:

Clark Cooney, OR, 1-year term
 Larry Hatfield, KY, 1-year term
 Damon Slaydon, TX, 1-year term

Laws and Regulations:

Dennis Johannes, CA, 5-year term
 Pat D'Errico, NJ, for 3 years replacing Ross Andersen, who started a term on the BOD

Specifications and Tolerances:

Constantine Cotsoradis, KS, 5-year term

Administration & Public Affairs:

Steve Hadder, FL, 5-year term
 Bob Fuehne, Ralston Purina Co., Associate Member Representative

Nominating:

Aves Thompson, AK, Chairman
 Barbara Bloch, CA
 Tom Geiler, Barnstable, MA
 Charles Gardner, Suffolk Co., NY
 N. David Smith, NC
 Sidney Colbrook, IL
 Jim Truex, OH

Resolutions Committee:

Robert Alviene, Morris Co., NJ, 3-year term

Parliamentarian:

Bruce Adams, MN 1-year term

Chaplain:

Mike Hile, AR, 1-year term

Associate Membership Committee:

Allan Nelson, NW Associates, 5-year term
 Vincent R. Orr, ConAgra Refrigerated Prepared Foods, 5-year term

Between the Interim and Annual Meetings, the following appointments were made by NCWM Chairman Diggs:

Presiding Officers:

Charles Bruckner, PA, 1-year term
 Carol Fulmer, SC, 1-year term, replacing Damon Slaydon

Sergeants -At -Arms:

Ran Musser, VA, 1-year term
 Vernon Massey, Shelby County, TN, 1-year term

Credentials Committee:

John Bates, VA, 3-year term

NTEP Business Plan Work Group:

Ross Andersen, Chairman

The following appointments were made by NTEP Committee Chairman Thompson to Sectors of the National Type Evaluation Technical Committee (NTETC):

Belt Conveyor Scale Sector:

Robert Athearn, CO Department of Agriculture
 Lars Marmsater, Merrick Industries, Inc.
 Peter Sirroco, Thayer Scale - Hyer Industries, Inc.

101-7 I Membership

The total NCWM membership, as of June 12, 2000, was 3,369. The membership breakdown by category is as follows:

State Government	-	1,030 (31%)	Associate Members	-	1,303 (39%)
Local Government	-	696 (21%)	Foreign Associate	-	37 (1%)
U.S. Government	-	44 (1%)	Foreign Government	-	34 (1%)
			Retirees	-	225 (6%)

101-8 I Meetings, Annual and Interim, Future

As of July 17, 2000, the plans for future meetings are as follows:

2001 Interim Meeting

The meeting is scheduled for January 14 to 17 at the Mesa Pavilion Hilton Hotel in Phoenix, AZ. The meeting dates were changed so that the meeting could begin on Sunday and end on Wednesday.

2001 Annual Meeting

The meeting is scheduled for July 22 to 26 at the Grand Hyatt Hotel in Washington, DC.

2002 Interim Meeting

The meeting is scheduled for January 27 to 30 at the Bethesda, MD, Hyatt.

2002 Annual Meeting

The meeting is scheduled for July 14 to 18 in Cincinnati, OH, at the Omni Netherland Hotel.

2003 Annual Meeting

Sites are being investigated in Reno, NV, for this meeting.

101-9 I Program, OWM and NIST

At the 2000 Interim Meeting, Gil Ugiansky, then Chief of the NIST Office of Weights and Measures (OWM), provided a status report on staffing and other support that OWM and NIST provide to the Conference. He said that Tom Ahrens, who worked on the National Type Evaluation Program (NTEP), had accepted a job outside NIST. As a result, OWM had three vacancies. He said that plans to hire new staff were on hold until funding issues associated with NTEP are resolved. Dr. Ugiansky announced that a copy of his presentation to the NCWM Board in October 1999 on planned reprogramming of OWM activities as a result of the NCWM's assuming responsibility for the administration of NTEP was available on the NTEP Transition Internet Home Page (www.nist.gov/nteptransition).

Henry Oppermann, the new Chief of OWM, provided an update for the BOD at the Annual Meeting. He said that OWM is in the process of hiring two new staff members: one in the device technology area and one in the laboratory technology area. Mr. Oppermann reported that OWM has received funds from NIST Director Ray Kammer to help replace the funding that will be lost as a result of the transition of the National Type Evaluation Program to the NCWM. Additional funding, expected from Technology Services next fiscal year, may make it possible for OWM to hire additional staff. OWM is in the process of developing a 3-year strategic plan to identify high priority initiatives to pursue. The office has established a focus group made up of representatives of State and local weights and measures jurisdictions, industry, and other Federal agencies to review and comment on the strategic plan. Lou Straub was asked to participate in the focus group as the NCWM's representative. Mr. Oppermann stated that OWM will eventually review the strategic plan with the NCWM Board annually.

101-10 I Program, International Organization of Legal Metrology

Sam Chappell, Chief of the NIST Technical Standards Activities Program, summarized recent U.S. participation in OIML standards development activities in legal metrology. A copy of his written report is included in Appendix B. Chairman Diggs announced that Dr. Chappell is retiring. Mr. Diggs thanked Dr. Chappell for participating in the Conference and contributing to legal metrology activities.

Charles Ehrlich announced at the BOD's open hearing at the Annual Meeting that Wes Diggs will attend the Sixth Asia-Pacific Legal Metrology Forum in Taipei and Ross Andersen will be attending the 35th CIML Presidential Council Meeting and the 11th International Conference of Legal Metrology to be held in London in October 2000. Dr. Ehrlich said that a written report on the activities of the International Organization of Legal Metrology since January 2000 would be provided for the Board's final report (see Appendix B).

101-11 I Special Committee on Legislative Liaison Status Report

Tom Geiler, Chairman of the NCWM's Special Committee on Legislative Liaison, reported to the BOD on the Committee's activities. He said that the NCWM brochure had been completed. The brochure was designed to be distributed to U.S. and State legislators and others to inform them of the importance of weights and measures activities and the role and impact of NCWM in support of those activities. Complimentary copies have been mailed to each State Director. Additional copies may be purchased through the Headquarters Office.

101-12 I Metrology Subcommittee Report

Ken Fraley presented a status report on the activities of the Metrology Subcommittee since the 1999 NCWM Annual Meeting. He told the Board that, during the week of the Interim Meeting, he and a group of other State metrologists were participating in training at NIST on MeasureNet., an Internet-enabled, interactive system to support training and collaborative work between NIST and the State weights and measures laboratories. Mr. Fraley said that the metrologists thought that this new tool would be very useful. A copy of the Subcommittee's complete written report is contained in Appendix C.

Lou Straub met with Ron Balaze, Georgia Harris, and Henry Oppermann at the 2000 Annual Meeting to obtain more information about the Metrology Subcommittee's request for funds for a meeting with NIST management. The Board stated that participants in the meeting will receive funds for their hotel expenses and a per diem at the usual Conference rate of \$35 a day if their States cannot pay the expenses. The BOD then unanimously voted to allocate funds not to exceed a total of \$1,000. It was noted that this would be the total amount of funding to be provided to the Metrology Subcommittee for the year.

101-13 I Mentoring Program

The Board discussed expanding the role of the Nominating Committee to include efforts aimed at leadership development. The Board will discuss this concept more fully at its next meeting.

101-14 I Service Technician Outreach

This was item 101-15 in the BOD's Report to the 84th NCWM, 1999. Past-Chairman Aves Thompson said that he had had little opportunity to work on this item. He suggested that, since the A&P Committee had a similar item on its agenda (item 403-5, Service Personnel Training), the BOD should ask the Committee to take the lead in efforts intended to better serve the needs of NCWM members from the service agency sector of the weights and measures community. The Board moved this item to the A&P Committee agenda with a broad mandate to explore ways to improve relations with the device sales and service industry.

101-15 I Copyright of NIST Handbooks by NCWM

This item was carried over from item 101-16 in the BOD's Report to the 84th NCWM, 1999. The Board reviewed previous legal opinions presented by NIST concerning the legality of NCWM copyrighting joint publications. The Board then discussed some of the pros and cons of copyrighting the documents. Rich Kayser indicated that NIST would review the issues and communicate its positions/concerns to the Board. The Board will discuss this issue further at its April meeting. (See Issue 2 in Appendix A, NCWM, Inc., 2000 Strategic Plan, for background on this item.)

At the Annual Meeting, the Board unanimously voted not to pursue the copyright of Handbooks 44, 130, and 133 at this time. The Board is going to explore with OWM the possibility of the Conference assuming responsibility for publication of the Annual Report.

101-16 I Revision of NIST Handbook 44

This item was carried over from item 101-17 in the BOD's Report to the 84th NCWM, 1999. NCWM Chairman Wes Diggs announced in July 1999 that he had appointed a Working Group headed by Ron Murdock, NC, to recommend revisions to Handbook 44 that would modernize the Handbook and make it easier to use and understand. The Working Group had its first

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meeting on September 26, 1999, in Olympia, WA. During the meeting, the group developed the proposed work plan shown in Appendix D.

At the 2000 Interim Meeting, Working Group Chairman Murdock gave a status report on the group's progress. He emphasized that the Working Group plans to begin by focusing on the Handbook's organization and format rather than trying to rewrite it. Some changes that the Working Group is considering are putting the User Requirements in the front of the various Codes, including some of the information in the Fundamental Considerations section in the relevant Codes, and putting the definitions back in the Codes to which they apply. A number of groups are involved in reviewing the various Codes to identify changes that would make them easier to use. Mr. Murdock stressed that the reorganization of the Handbook could be a long-term project.

101-17 I Remanufactured Devices Task Force Status Report

In the spring of 1999, then NCWM Chairman Aves Thompson appointed a Task Force on Remanufactured Devices at the request of Specifications and Tolerances (S&T) Committee Chairman Darryl Brown. Both the National Type Evaluation Program (NTEP) Board of Governors (now the NTEP Committee) and the S&T Committee have addressed various aspects of this issue in recent years. (See Board of Governors item 102-7 in the Report to the 81st NCWM, 1996, and item 310-1 in the S&T Report to the 84th NCWM, 1999, for more information.) Establishing the Task Force is the latest attempt to resolve this issue.

Members of the Task Force met in July after the NCWM Annual Meeting and again at the Interim Meeting. Their Chairman, Jim Truex, reported to the Board on the group's progress. The Task Force plans to develop, by August 2000, recommendations that can be reviewed by the regional weights and measures associations and then be voted on in July 2001. (See Item 310-1 in the S&T Committee Report for more information.)

101-18 I National Type Evaluation Technical Committee Sector Meetings

Source: NCWM, Inc., Board of Directors

Recommendation: The NCWM, Inc., Board of Directors is considering implementing a guideline which would consolidate the meetings of the National Type Evaluation Technical Committee (NTETC) Belt-Conveyor Scales, Measuring, and Weighing Sectors into a single meeting held in a central area of the country. It is planned that the Sectors would meet consecutively with a joint meeting in between. For example, the order of the meetings might be as follows: Weighing, Belt-Conveyor Scales, Joint Meeting, Measuring. The BOD believes that this would represent cost savings to the NCWM, Inc., because the costs of scheduling individual meetings would be consolidated and, thus reduced, and the travel costs for public members who normally attend separate meetings would be reduced. Additionally, the combined meeting would eliminate the need for people on all three sectors to travel to multiple meetings and would result in more consistent and uniform decisions on issues that affect all Sectors.

The BOD is interested in input from Sector members and other NCWM members on this proposed guideline.

Background: The meeting schedules for the various NTETC Sectors have changed over the years in response to the needs of the individual Sectors. The complexity and the number of agenda items have increased as new technology has evolved, and the number of different types of devices evaluated by NTEP has grown. As a result, Sector meetings have become longer.

Several of the Sectors try to meet in conjunction with regional weights and measures associations to minimize the costs of the meeting and to reduce the travel requirements for individual Sector members. While these meetings are very successful and the Sectors have greatly appreciated the hospitality provided by various organizations, the BOD discussed whether or not there might be a more efficient and cost effective approach.

The current practice of scheduling Sector meetings in conjunction with related meetings causes problems for some members because it means they may be away from their offices for an extended period of time. This can be particularly difficult for NTEP laboratory representatives since NTEP laboratory meetings are often scheduled in conjunction with the Sector meetings. Additionally, scheduling several meetings is more costly than scheduling a single meeting.

Another aspect of the Sectors' work that has been observed is that some areas addressed by individual Sectors tend to overlap. For example, many administrative issues and NIST Handbook 44 General Code issues apply to the evaluation of all device types. However, the Sectors have little opportunity to meet jointly to develop consistent policies for addressing these issues.

At the 2000 NCWM Interim Meeting, the BOD asked Tina Butcher of NIST to put together a sample of what the agenda would look like for a combined meeting of the Sectors.

As requested by the BOD, Mrs. Butcher provided a sample agenda for a joint meeting of the Sectors for the Board's review at the 2000 Annual Meeting (see Appendix E). During the discussion of the agenda, it was reported that the Gas Pump Manufacturers Association (GPMA) objects to the idea of having a joint meeting that is not associated with a regional weights and measures meeting because it would mean that its members would have to attend an extra meeting. A copy of the sample agenda was provided to Rich Tucker of GPMA for comment. Gilles Vinet, Measurement Canada, said that he supports having one meeting because it would reduce costs for his organization. It was pointed out that some Sector meeting participants might have to stay an extra day in order to attend the "General Issues" portion of the meeting. Henry Oppermann suggested that the BOD might want to consider having concurrent sessions of the Sectors to avoid this problem. Will Wothlie said that if concurrent sessions were held, people who were members of two Sectors would have to choose which meeting to attend. Steve Cook noted that his State will only allow two individuals to attend an out-of-State meeting.

To reduce costs to the NCWM, Inc., and to reduce the amount of travel required by participating laboratories and NIST Technical Advisors, the Board discussed the possibility of holding consecutive meetings of the Belt-Conveyor, Measuring, and Weighing Sectors.

After considering all of the comments, the Board voted to plan for a joint session of the Sectors in 2001 to be held during the time period between the end of the Annual Meeting and the end of September. The format would be similar to that shown in the sample agenda.

101-19 I Handbook 133 Revision Status Report

At a joint meeting of the BOD and the Laws and Regulations Committee, Ken Butcher and Tom Coleman of the NIST Office of Weights and Measures reported on the status of the revision of NIST Handbook 133, Checking the Net Contents of Packaged Goods. Mr. Butcher said that the revision of the Handbook had been halted because of a disagreement over the format of the revision. He asked for the Board's and the L&R Committee's approval to go forward with his plan to:

- Continue with the current question and answer format,
- Complete a third draft that incorporates the comments he received on the second draft,
- Put the technical changes on the agenda of the L&R Committee next year.

After discussing the pros and cons of keeping the present format or changing to a different format, the Board told Mr. Butcher to continue with his plan. The L&R Committee Chairman said that the Committee would support the Board's decision. (See the L&R Committee's Interim Report for more information on this item.)

At the 2000 Annual Meeting, Henry Oppermann reported that the next draft of the Fourth Edition of Handbook 133 will be published in October 2000.

G. W. Diggs, VA, Chairman

A. Thompson, Alaska, Chairman of the NTEP Committee

L. Straub, Maryland, Chairman-Elect

J.A. Rogers, Virginia, Treasurer

R. Andersen, New York

R. Davis, Fort James Corporation

M. Hile, Arkansas

M. Pinagel, Michigan

S. Malone, Nebraska

R. Murdock, North Carolina

G. West, New Mexico

Board of Directors

Executive Secretary: H. Oppermann, NIST

Advisors:

J. Koenig, NIST

B. Palys, Executive Director, NCWM Headquarters

G. Vinet, Canada

Board of Directors

Appendix A

NCWM, INC. 2000 STRATEGIC PLAN

Business Plan

ISSUES

1. The National Institute of Standards & Technology Handbook 44 should be reorganized and rewritten.

NIST Handbook 44 is one of the most important products of the National Conference on Weights and Measures. The last major revision of Handbook 44 was in 1949; since then there have been many additions and minor revisions. Many users of the handbook believe that it is outdated and needs to be reorganized and rewritten. Many of the requirements in many of the specific codes relate to mechanical devices, whereas most of the devices in today's world are electronic. Most users of Handbook 44 agree it is not clearly written and leaves too much to interpretation.

There is no question that the reorganization and rewriting of handbook 44 would be a major undertaking and require a long-term commitment on the part of the Conference. A committee of 10 to 15 people representing the major interest groups in the Conference should be appointed to determine the feasibility of such an undertaking.

Current status

Ron Murdock of North Carolina was appointed in July 1999 by NCWM Chairman, Wes Diggs, to chair a work group of public and private sector members to make recommendations for the reorganization of Handbook 44. The work group is comprised of the following members:

Johnny Parrish	Fisher-Rosemount Petroleum
Steve Cook	California
Steve Hadder	Florida
Bill West	Ohio
Michael Keilty	Micro Motion, Inc.
Ross Andersen	New York
Tina Butcher	NIST
Gordon Johnson	Gilbarco
Gary Lameris	Hobart Corp
Dave Quinn	Fairbanks Scales
Gary West	New Mexico
Richard Wotthlie	Maryland
Robert Traettino	Liquid Controls LLC
Otto Warnlof	NIST/retired
Ron Murdock	North Carolina

Their first meeting was held September 26, 1999, in Olympia, Washington. Working Group Chairman, Ron Murdock will provide a current status report on Thursday, January 20, 2000, when Item #101-16 of the Interim Meeting Agenda for the Board of Directors is presented.

Assigned to:

Ron Murdock, North Carolina Standards Division.

Estimated completion date:

In Progress

2. The NCWM should move to copyright handbooks and other publications that are products of the Conference's efforts.

Much of the NCWM's resources in both time and money go into the development and publication of NCWM/NIST publications. It would seem prudent to be in a position to protect these documents from misuse and to ensure that NCWM can receive compensation for these publications when deemed appropriate. Several private organizations reprint NCWM

Board of Directors

publications using their company or association logos on the cover. Those publications are then distributed to clients and other interested parties. In some cases, the reprinted documents are given away or sold as a membership inducement or otherwise to promote the private organization.

Another consideration is that because NCWM/NIST publications are referenced in many State laws, many attorneys and at least one State's Attorney General believe that it is a part of the State law, and since they are not copyrighted, copies must be made available to the public upon request. In the audit of the NCWM 1997 - 98 financial records, the auditor suggested that the Conference investigate copyrighting in order to protect all items proprietary in nature and to prevent competition for the sales of these publications.

One of the major issues concerning the copyright of these publications is ownership. Ray Kammer, Director of NIST has said that he would not be willing to let these publications be copyrighted until certain questions were addressed. Note: These questions may be more related to the free distribution of publications to certain non-private organizations such as depository libraries. However, based on a list provided by OWM, the OWM staff believes that all major publications are the property of both NIST and NCWM.

To further complicate the issue of ownership, handbooks have been published with OWM technical advisors' names listed on the title pages as editors. This practice may have started in the early 1980s with Carroll Brickenkamp and NIST Handbook 133. If one looks at the title page of the present publications, they will find a list of the OWM Technical Advisors as well as officials of the Department of Commerce and the statement "as adopted by the 84th National Conference on Weight and Measures." Beyond stating the fact that NCWM adopts the publications, no recognition is given to the NCWM for its part in writing and developing the publications.

If the Conference does move to copyright the publications it may be a major undertaking in terms of cost. Our attorney, Simon Stapleton has suggested that, for the purpose of this project, we obtain an attorney who specializes in copyrighting. This would be in addition to the legal fees already budgeted. NIST has been paying for the printing and mailing of the handbooks, which is a major expense. Will they continue this practice if the publications are copyrighted?

Current status

Mike Rubin, NIST Counsel, originally indicated that the publications are owned by NCWM and may be copyrighted by NCWM. Some at the NIST OWM believe the handbooks are jointly owned. Aves Thompson has asked the OWM at NIST to have some of its personnel serve on a committee with Conference officials to bring the issue of ownership to a resolution.

This item was discussed at the Board of Directors meeting on October 28, 1999, with Rich Kayser and Tom Gills of NIST. At that time Dr. Kayser indicated that NIST was not ready to move on the copyright issue. This item first appeared in the January 1998, NCWM, Inc., Strategic Plan; however, we have made little progress.

Assigned to:

Board of Directors

Estimated completion date:

Under Consideration

3. The Membership year should coincide with the Fiscal Year.

Not having the Membership and Fiscal Years coincide, requires additional accounting on the part of NCWM Headquarters. Depending on when a membership payment is received, a portion of the payment has to be credited to the present FY and a portion to the next FY. Also, because the dues payments are divided, it is difficult to obtain a clear picture of NCWM's or the Associate Membership's financial position. This recommendation will require a change in the by-laws.

Dues paid for the membership year of July 1999 through July 2000 will be extended to cover a 15-month period and become due October 1, 2000, which will coincide with the new Fiscal Year.

Current status

At the 1999 NCWM Annual Meeting, the Conference membership voted to delete specific dates for the membership year to allow the Board of Directors more flexibility in setting the membership year in accordance with good business practices.

Assigned to:

Board of Directors

Estimated completion date:

Completed

4. The NCWM should not administer OWM Metrology Funds or Training Grants.

The results of the 1998 audit noted that, for some disbursements from the grant account, NCWM did not have adequate documentation of authorization for purchase. Items were at times purchased or contracted for by others on behalf of the NCWM, and there was no formal approval process. As a result, a formal approval process was adopted.

On the surface there may be some concern about giving up the training grants. It may appear that by giving up the grant money the NCWM loses control of how the money may be used. We have developed a protocol for national surveys involving the NCWM. This protocol was developed because of the Conference's involvement with the training grants. By giving up the training grants, the NCWM is not necessarily giving up control of how the grant money is used. The NCWM has decided not to participate in national surveys unless the protocol is followed, regardless of revenue sources. If NIST wants to conduct a survey outside the Conference, it is not bound to follow the protocol. As a practical matter, NIST does not award the grant money until it agrees with the training for which it is to be used.

Current status

The Board of Directors at their June 2, 1999, meeting agreed to refund the Metrology Funds when that account is satisfied and not accept any new Training Grants after the money obligated in the current grant has been spent. NCWM, Inc., will charge a fee for administering overhead costs.

As of January 10, 2000, unspent training grant funds of \$8,638.00 were returned to NIST. The return of any OWM metrology funds will be resolved with the current audit; this should be completed by January 23, 2000, during the Interim Meetings.

Assigned to:

Treasurer and NCWM Headquarters

Estimated completion date:

In Progress

5. Procedures should be established to ensure that voting members of the NCWM have the opportunity to vote on all non-technical issues before the Conference.

It is a general belief all issues presented by the technical committees of the NCWM are technical and can only be voted on by the Active Membership. It is conceivable that non-technical issues could be developed by these committees. An example of this happened at the 1998 Annual Meeting when the S&T and L&R Committees established procedures for getting issues before their respective committees. This was not a technical issue and all members should have been given the opportunity to vote.

Current status

The Board adopted the following policy at the 1999 Annual Meeting:

Policy of Business Versus Technical Issues

The initial determination as to whether an item is business or technical shall be made by the Chair of the Standing Committee. If the Standing Committee is unable to resolve the issue, the decision shall be made by the Board of Directors. The Standing Committee and the Board of Directors shall use the following guidelines in making a determination:

A. Technical issues include, but are not limited to, the following:

1. Items that will be published in Publication 14 or Handbook 44, 105 series, 130, and 133 and
2. Items that may lead to enforcement action by regulatory agencies.

B. Business issues include, but are not limited to, the following:

1. Items concerning training and
2. Items relating to how the Corporation is managed including, but not limited to, changes to the Bylaws and other documents governing the operation of the Corporation.

The policy will be included in the Corporation's Policies and Procedures Manual.

Assigned to:
Board of Directors

Estimated completion date:
Completed

6. Develop a brochure telling the story of weights and measures in the United States and how the National Conference on Weights and Measures fits in the process.

The NCWM Legislative Liaison Committee meets with United States Senators and Congressmen to explain and promote the NCWM. These meetings are usually limited to 15 - 20 minutes. It is important to have a brochure or other suitable material that can be left with these individuals giving more detail about the NCWM than can be discussed in a 15-minute meeting. These brochures would be designed to be suitable for distribution to legislators or legislative aides at all levels of government.

Current status

At the NCWM 1999 Annual Meeting, the Board of Directors authorized an expenditure of \$5,000 from Conference reserve funds to complete the brochure project in cooperation with the Associate Membership Committee. Elizabeth Jackson, Marketing Communications, Owings Mills, Maryland, completed the brochure in December 1999. The brochures have been forwarded to the NCWM Headquarters.

Assigned to:
Tom Geiler

Estimated completion date:
Completed

7. Take over the administration of the National Type Evaluation Program by October 1, 2000.

At the 1999 NCWM Annual Meeting, the Board of Directors took comments from industry and weights and measures officials on three proposed options for administering the National Type Evaluation Program. (Background information on the three options can be found in 1999 NCWM Publication 16.) After hearing comments at two open hearings and meeting with NIST management officials, the Board of Directors unanimously selected option #1. This option removes NIST from the role of issuing NTEP certificates and results in the NCWM assuming responsibility for the administration of NTEP.

Current status

NCWM Chairman, Wes Diggs, proposed the following timetable to address the NTEP transition at the Board of Directors meeting on October 29, 1999.

September 2, 1999 -	Meet with Gil Uganisky and notify him that the NCWM plans to assume the total administrative part of NTEP by October 1, 2000.
September 10, 1999	Notify Gil Uganisky in writing of the October 1, 2000 date.
September 10-24, 1999	Gil Uganisky's window of opportunity to respond.
September 30, 1999	Send out renewal invoices for NTEP Certificates of Conformance (CCs).
December 30, 1999	Send out new NCWM CCs to those who have paid their maintenance fee.
January 1, 2000	Start preparing RFP (30 days)
February 1, 2000	Send out RFP (60 days)
April 1, 2000	Screen RFP (15 days)
April 15, 2000	Conduct interviews (15 days)
May 1, 2000	Selection/Acceptance (30 days)
June 1, 2000	New Manager is on board

June 1-Sept 30, 2000 Transition (120 days)

October 1, 2000 NCWM takes over all administrative activities of NTEP.

Assigned to:
Board of Directors

Estimated completion date:
In Progress

NCWM, Inc.
2000 Strategic Plan
As of October 22, 1999

		Start Date	Completed Date	Status
1	The National Institute of Standards & Technology Handbook-44 should be reorganized.	7-1999		In progress
2	The NCWM should move to copyright handbooks and other publications that are products of the Conference's efforts.	1-1998		Under consideration
3	Membership year should coincide with the fiscal year.	1-1999	7-1999	Completed
4	The NCWM should not administer OWM metrology funds or training grants.	6-1999		In progress
5	Procedures should be established to assure that voting members of NCWM should have the opportunity to vote on all nontechnical issues brought before the Conference.	6-1999	7-1999	Completed
6	Develop a brochure telling the story of weights and measures in the United States and how the National Conference on Weights and Measures fits in the process.	7-1998	12-1999	Completed
7	Take over the administration of the National Type Evaluation Program by October 1, 2000.	7-1999		In progress
8	Determine continued level of participation in international standards development organizations. (OIML, APLMF, APEC)	4-15-97		Ongoing
9	Determine continued level of participation and liaison with other standards writing organizations e.g., ASTM, API, NCSL	4-15-97		Ongoing
10	Provide ongoing liaison to related associations; e.g., SMA, NISA, GPMA, FMI, ISWM, APL, NCSL	4-15-97		Ongoing
11	Establish procedures for prioritizing resource allocations and operations for providing technical support and guidance for the NCWM Standing Committees and Work Groups by the 1999 meeting.	4-15-97		In progress

Appendix B

Report on the Activities of the International Organization of Legal Metrology (OIML) and Other Legal Metrology Organizations July 2000

Charles D. Ehrlich, Chief
Technical Standards Activities Program
Office of Standards Services, NIST

Personnel Changes in the Technical Standards Activities Program

Dr. Samuel E. Chappell retired from Federal service on May 3, 2000, and I was assigned the position of Chief of the Technical Standards Activities Program (TSAP). In April 2000, NIST recommended to the Department of State that I replace Dr. Chappell as the United States (U.S.) member of the International Committee of Legal Metrology (CIML). The International Bureau of Legal Metrology (BIML) confirmed my appointment to the CIML on July 5, 2000.

Deborah M. Ripley of TSAP accepted an appointment in April 2000 with the Department of the Navy. Her responsibilities related to National Conference on Weights and Measures (NCWM) activities will be shared by Ken Butcher, formally of NIST's Office of Weights and Measures, and S. Wayne Stiefel who joined TSAP in September 1999 after completing previous assignments in another area of the Office of Standards Services (OSS). This final report completes the interim report that Dr. Samuel E. Chappell provided to the NCWM at its Interim Meeting in January 2000.

Report on the 34th Meeting of the International Committee of Legal Metrology (CIML) October 6 to 8, 1999, in Tunisia

Representatives of 48 of the 56 member nations participated in the CIML meeting from October 6 to 8, 1999, in Tunis, Tunisia. Representatives of Corresponding Member States and Regional Legal Metrology Organizations participated for the first time as a result of recent decisions by CIML. Reports on the following items were presented:

Technical Activities

The CIML took the following action on these Recommendations:

- R 60 – Adopted a revision of OIML R 60 “Metrological Regulation of Load Cells.”
- R 129 – Adopted a new Recommendation on “Multi-dimensional Measuring Instruments.”
- R 49 – Adopted a revision of R 49 “Water Meters for Cold Potable Water - including both mechanical and electronic meters.”
- R 65 – Adopted a revision of R 65 “Force Measuring System of Uniaxial Material Testing Machines.”

The United States is Secretariat for the Technical Committees (TC) responsible for developing PR-1 and PR-4 and participated significantly in the Committees responsible for the other two projects. Dr. Chappell provided a report on the status of the projects in the various OIML Technical Committees and emphasized the importance of keeping the work current. It was decided that, in addition to an annual report on the status of the work projects from the Secretariats of the Technical Committees, BIML will also request a report on plans for reaffirming or revising any projects that are more than 5 years old.

OIML TC3 "Metrological Control"

Dr. Chappell reported on an International Working Group (IWG) meeting of OIML TC3 "Metrological Control" held in Paris, France from June 1 - 3, 1999. Forty persons attended. The purpose of the meeting was to review the work program of TC3 and establish a new subcommittee, to be named SC5 "Conformity Assessment," with the Secretariat shared by the United States and BIML. Projects will include a publication on the OIML Certificate System for Measuring Instruments" and a draft Document on the "Mutual Acceptance Agreement" (MAA). A 4th draft OIML Document on the MAA was reviewed at the meeting, and a 5th draft is being prepared. Supplementary documents are also being prepared to facilitate implementing an MAA. These documents will include interpretations of applicable International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC) guides and standards for assessing laboratories and authorities who issue test reports and certificates of conformance, and for conducting testing and preparing test reports.

Dr. Chappell reported on a meeting of a task group of OIML TC3/SC5 that was established to develop a guidance document on the "expression of measurement uncertainty" in legal metrology applications. The task group has representatives from France, Germany, and the United States. The title of the draft document will be "Decision Criteria for Conformance of Measuring Instruments in Legal Metrology Applications."

OIML TC6 "Prepackaged Products"

Dr. Chappell reported on a meeting of a task group for TC6 "Prepackaged Products" to discuss the revision by the United States as Secretariat of the OIML R 87 "Net Content in Packages." The revision will include a proposal for establishing within OIML an International Quantity (IQ) Mark System similar to the existing e-mark within the European Union for prepackaged products. The task group included representatives of Germany, the Netherlands, and the United States.

OIML TC5 "Electronic Instruments"

J.F. Magana, CIML member for France, reported on a CIML Seminar on "software" held in Paris on September 30 to October 1, 1999. On the basis of the report, CIML approved establishing a new technical subcommittee, SC2 "Software," within TC5 "Electronic Measuring Instruments."

OIML Certificate System

Dr. M. Kochsiek, CIML member for Germany, provided a report on the *OIML Certificate System* including the new Recommendations to be added to the System and numbers of Certificates issued for the various categories of instruments that are now a part of the System. The BIML prepares a notice of certificates issued each quarter in the *OIML Bulletin* and reports annually to CIML members on the status of the System. The report identifies participating member nations with testing laboratories that are issuing authorities.

Developing Countries

A meeting of the Development Council took place before the CIML meeting. Mrs. Annabi, CIML member for Tunisia and Chair of the Development Council, presented a draft plan of action to CIML members for comment. The Chairman and Vice-Chairman will prepare an amended draft with support from BIML staff. Final approval of the plan by CIML will be carried out by correspondence.

Liaisons with International and Regional Organizations

The OIML President, Gerhard J. Faber of the Netherlands, CIML members, and Bernard Athané, Director of BIML, provided reports on information concerning liaisons with various international and regional bodies. These included the Mètre Convention, the International Laboratory Accreditation Cooperation (ILAC), the Joint Committee for Guides on Metrology (JCGM), the International Standardization Organization (ISO), the International Electrotechnical Commission (IEC), the International Accreditation Forum (IAF), the World Trade Organization (WTO), the Western European Legal Metrology Cooperation (WELMEC), the Inter-American Metrology System (SIM), the Asia-Pacific Legal Metrology Forum (APLMF), and others. In particular, the requests for priority of work projects from APLMF were noted.

All regional legal metrology organizations were invited to send representatives to participate in this CIML meeting in an effort to better coordinate the work among them and to be aware of the latest developments within OIML. Note: Seton Bennett, CIML member for the United Kingdom, called an informal meeting of all regional organizations represented. Dr. Chappell along with participants from Uruguay and Argentina were asked to represent SIM.

Ms. Vivian Liu, Economic Officer of the WTO, gave a presentation on the Technical Barriers to Trade (TBT) Committee of the WTO and reviewed the development and application of international standards, multilateral recognition agreements, accreditation and certification requirements and their influence on world trade. OIML is an observer on the TBT Committee.

OIML Long-term policy

OIML President Gerhard Faber presented a draft OIML “Long-range Policy” prepared by the Presidential Council. The basis for this policy was the report on long-term policy prepared by past CIML President Knut Birkeland and the results of the Symposium on the “Role of Metrology in Economic and Social Development” in Braunschweig, Germany, in June 1998. The symposium was co-sponsored by Germany’s Physikalisch-Technische Bundesanstalt (PTB*), OIML, BIPM, and the International Measurement Confederation (IMECO).

* The PTB is Germany’s national institute for science and technology and the highest technical authority of the Federal Republic of Germany on metrology and physical safety engineering.

The policy covered four major areas: (1) recommend means for improving and accelerating the technical activity of the Technical Committees and Subcommittees and increasing the participation of the OIML members, (2) the need to develop procedures for mutual recognition and equivalence agreements, (3) the need to demonstrate the importance of legal metrology and identify the basis of legal metrology and its specific place amongst other aspects of metrology and related activities, and (4) the need to facilitate and improve the work of CIML members. Several documents are under development to facilitate the implementation of this policy.

Report on BIML Activities.

The BIML Director, Bernard Athané, submitted a written report on BIML activities since the last CIML meeting. This report was printed in the *OIML Bulletin* for January 2000 that is available at <http://www.oiml.org> on the Internet.

CIML Presidency

The 6-year term of President Faber and Dr. Chappell’s term as Vice President will end in 2000. Mr. Faber announced that he would be a candidate for another term, but Dr. Chappell announced that he would not. CIML will act to fill both positions at its next meeting in October 2000.

BIML Director

See the comments regarding the search for a new Director under the report in the following section on the Presidential Council Meeting.

Next Meeting

It was announced that the 35th meeting of CIML will be held in conjunction with the 11th Conference of Legal Metrology in London on October 9 to 13, 2000.

Report on the OIML Presidential Council Meeting February 21 to 22, 2000

The meeting took place at BIML on February 21 to 22, 2000. A major subject of the discussions was the 1999-2002 OIML "Action Plan" approved at the 34th CIML meeting. (See the report on the 34th CIML meeting.) Also discussed were the means by which the assistance to developing countries could be carried out effectively through the Development Council.

A report on the technical work of OIML was provided by Attila Szilvássy, Assistant BIML Director, based on the results of the Annual Reports of the Secretariats of the Technical Committees and Subcommittees including accomplishments and plans. Twenty-nine persons applied as candidates for the position of Director of BIML announced in December 1999. The number was reduced to seven for further review by a selection committee, identified by OIML President Faber, that met in March 2000 in Paris. After an assessment of the candidates by the selection committee, the President of CIML will select one candidate for presentation to CIML for consideration and approval at its 35th meeting in London in October 2000.

Dr. Chappell was among the representatives of the OIML, the "Metre Convention," and the International Laboratory Accreditation Cooperation (ILAC) that met at the International Bureau of Weights and Measures (BIPM) in Sèvres Cedex, France after the Presidential Council meeting. The general purpose of these periodic meetings is to explore areas of mutual interest for possible cooperation. The participants exchanged information about activities within each organization. The area of greatest interest appeared to be in support of developing countries. It was suggested that a follow-up Symposium should be considered for the "Role of Metrology in Economic and Social Development" held in Braunschweig, Germany, in 1998.

Activities of OIML Secretariats

This section provides a report on the work underway in Technical Committees (TCs) and Technical Subcommittees (SCs) of specific interest to the NCWM to develop or revise OIML International Recommendations (Rs) or International Documents (Ds). Also included are reports on recent activities of those groups, and schedules of future activities of Secretariats, the U.S. National Working Groups (NWGs), and the International Working Groups (IWGs) of committees and subcommittees. Ken Butcher and Wayne Stiefel of TSAP presented details of these activities to the NCWM Committees on "Specifications and Tolerances" and "Laws and Regulations."

TC1 Terminology (Poland)

A draft revision of the "Vocabulary of Legal Metrology" (1978 Edition) was distributed by BIML to CIML for comment and vote by March 2000. The United States voted no with comments; however, the draft revision passed. BIML is assisting the Secretariat in editing a final revision of the vocabulary taking into consideration comments received from CIML members.

TC3 Metrological Control (U.S.)

The CIML approved the establishment of a new TC3/SC5 "Conformity Assessment." (See the report on the 34th CIML meeting.)

TC3/SC1 Initial and Subsequent Verification (U.S.)

A draft OIML Document in December 1999 on "Initial Verification Utilizing the Manufacturer's Quality System" was distributed for comment and vote by March 2000. The ballot on the Document was successful. The Secretariat is making editorial changes in consideration of comments received prior to publication of this Document by BIML.

TC3/SC5 Conformity Assessment (U.S. and BIML)

The 5th CD OIML Document "Mutual Acceptance Agreement on OIML Pattern Evaluations (MAA)" was distributed by the Secretariat to participating members for comment and vote in December 1999. The ballot was not successful, so a 6th draft OIML Document on the MAA was distributed for comment and was the subject of an IWG meeting held in Paris in June 2000. The United States chaired the meeting and had representatives of the NCWM and U.S. instrument manufacturers as a part of the U.S. delegation. A 7th draft OIML Document on the MAA will be prepared based on comments received at the

IWG meeting and by correspondence and will be distributed for comment and vote in October 2000.

TC5 Electronic Instruments (Netherlands)

TC5/SC1 Electronic Instruments (Netherlands)

A draft revision of OIML D 11 "General Requirements for Electronic Measuring Instruments" was received from the Netherlands, the Secretariat for TC5/SC1 Electronic Instruments. The draft was sent to the U.S. National Working Group for TC9 for review and comment. Dr. Ambler Thompson of TSAP will serve as the technical leader to coordinate developing the U.S. comments and position on D 11. This coordination is necessary since this Document may have impact on all OIML Recommendations on weighing and measuring instruments and on those relating to devices in noncommercial applications in the United States (e.g., breath analyzers, and pollution test equipment.) Comments must be submitted by **August 25, 2000**. To obtain a copy of the draft revision of D 11 please contact Dr. Thompson at Ambler@nist.gov or in writing at:

Dr. Ambler Thompson
NIST Technical Standards Activities Program
NIST North (820) Room 133
100 Bureau Drive, Stop 2150
Gaithersburg, MD 20899-2150

Tel: 301-975-2333 or Fax: 301-926-1559

TC5/SC2 - Software (France and Germany)

OIML Symposium on Software: BIML and the Director of Metrology (SDM) of France sponsored a Symposium on Software September 30 and October 1, 1999, in Paris, France. Individuals from PTB (Germany); Bureau Roumain de M trologie L gale (BRML) (Romania); Nederlands Meetinstituut (Nmi) (Netherlands); the National Conference on Weights and Measures (NCWM) (USA); security agencies such as Service Central de la S curit  des Syst mes d'Information (SCSSI) of France; representatives of the software industry, such as Interface Logic Systems, Inc. (U.S.); and manufacturers of flow computer systems, taximeters, and digital tachometers participated.

The PTB, SDM, and the NMI presentations emphasized analyzing software based on a "model" developed by the issuing authority or full-scale testing of the software under pattern approval. This approach requires laboratory personnel who are trained in computer science, electronics, and information technology. There were statements that this approach results in increased costs to manufacturers; however, it provides a better mechanism for deterring fraud. Charles Gardner (NCWM) gave an overview of the National Conference on Weights and Measures National Type Evaluation Program (NTEP) software policy, which is to evaluate software as part of a complete system. NTEP Certificates are issued based on the complete weighing or measuring system, not just the software alone.

The United States and European countries experience many of the same problems with fraudulent use of software. The PTB spoke about a situation in Europe where consumers were charged for an amount of gasoline that their vehicle tanks were unable to hold. Whenever, inspectors were onsite to test the dispensing systems, the tests proved to be within tolerance. Inaccurate readings were undetectable because the microchip installed in the dispenser speeded up or slowed down the pulses, increasing or decreasing the amount of fuel displayed. The United States reported that the same problem has been experienced in some U.S. States.

The "zapper" is another fraudulent device detected in the United States. A taximeter company in France described how the "zapper" works to perpetrate fraud by having a negative influence on the sensor. Dimensionally, the zapper is extremely small (approximately 2 cm to 3 cm). It costs approximately \$50 U.S. The vehicle operator controls the zapper with a switch, magnet, infrared (IR) sensor, or radio. The ability to defraud consumers depends on the control characteristics and the zapper technology. Authorities found that the latest generation of zapper technology has greater intelligence. There are three types of sensor-generators and five types of zapper-generators. Both types of generators send signals that can be modified to increase or decrease pulses. Zapper devices can be manufactured from components purchased at any retail electronics outlet. New York State and the City of New York have been working on legislation to assist weights and

measures inspectors in detecting these devices. Both the microchip and the zipper cases demonstrate the importance of field surveillance in detecting fraudulent devices.

The symposium confirmed that software applications are common in the marketplace. Typically, shortly after a software program is developed, modifications are made to the source code. Most commonly, modifications are made (1) to correct errors in the program code or logic (bugs); (2) to change the compiler or computer system; (3) to update the software to meet customers' needs or adjust to changes in the market; or (4) by a programmer who inserts hidden codes (virus). The issuing authority for pattern approval certificates is not always notified of these software changes. A proposal was adopted to establish an OIML workgroup to investigate software problems in legal metrology and to develop guidelines. As reported above, it was announced at the 34th meeting of the International Committee of Legal Metrology, that this project will be coordinated by TC5/SC2 "Software," which is the responsibility of France and Germany. The goal of this project is to develop a publication on Software in Legal Metrology. The United States will be a Participating member. Dr. Ambler Thompson of TSAP will coordinate the U.S. technical participation in this SC. For more information please contact Dr. Thompson at Ambler@nist.gov or in writing at:

Dr. Ambler Thompson
NIST Technical Standards Activities Program
NIST North (820) Room 133
100 Bureau Drive, Stop 2150
Gaithersburg, MD 20899-2150
Tel: 301-975-2333 or Fax: 301-926-1559

TC6 Prepackaged Products (U.S.)

Sam Chappell chaired a meeting of TC 6 on February 24 to 25, 2000, at the Maison de la Chimie in Paris. Twenty-nine delegates attended the meeting from 16 Participating members and one Observer member, plus representatives of CECIP (Committee of European Constructors of Weighing Instruments) and the BIML. The first Committee Draft (CD) revision of OIML R 87 "Net Content in Packages" was reviewed in its entirety. Specific and substantive changes to the draft were proposed, discussed and agreed upon for the main clauses and annexes. In particular, the Secretariat agreed to add an annex on drained weight.

The International Quantity (IQ) Marking System proposed in Annex C of the CD, intended to facilitate international trade, was discussed in detail. The principle of whether the system should be described within R 87 or made the subject of a separate document (along the lines of that on the OIML Certificate System) was considered. It was felt that the present Annex should remain since it outlined the principles of the system, although a much more detailed separate document would also be needed. The Secretariat agreed to revise Annex C in order to provide an explanation of its benefits to affected parties and simplify its application and implementation by all participants including regulatory bodies and small, medium and large packing firms. Resolutions of the meeting were:

1. To consider comments made at the meeting, and others submitted by correspondence to the Secretariat, on a first committee draft of R 87 by April 1, 2000.
2. To prepare a 2 CD revision of R 87 for review and comment by no later than August 2000;
3. To endeavor to complete the revision of OIML R 87 in time for it to be approved by the CIML at its October 2001 meeting;
4. To call this work to the attention of responsible authorities within OIML Member States and regions so that its requirements could be considered when revising and harmonizing applicable laws and regulations;
5. To recommend that mutual recognition of net content of product in prepackages be considered as a topic for discussion at the Round Table during the Eleventh International Conference in October 2000 in London;
6. To ensure that the status of this project is made known to all relevant organizations and, in particular, to the Technical Barriers to Trade Committee of the WTO.

The participants in the meeting expressed a special appreciation to the BIML for its efforts in arranging and hosting the

meeting in Paris. John Birch (Australia) thanked Sam Chappell for his work in the development of this CD, which is very significant in view of the importance of prepackaged goods in international trade.

TC7 Instruments for Measuring Length and Associated Quantities (United Kingdom)

TC7/SC5 "Multi-dimensional Measuring Instruments" (Australia)

The CIML approved the draft Recommendation on "Multi-dimensional Measuring Instruments." A draft of the test report format for that recommendation was distributed by BIML to CIML members for comment and vote by March 2000. The United States voted yes with comments. Copies will be made available when the document is published by BIML.

TC8 Instruments for Measuring Quantities of Fluids (Switzerland) -TC8/SC3 "Measuring Instruments for Liquids other than Water." (Germany)

At a February 2000 IWG meeting in Paris, the initial topic concerned comments received on the draft Recommendation R 118 "Test procedures and format of the test report for pattern evaluation of fuel dispensers for motor vehicles" circulated in May 1999. This discussion will be used to finalize R 118. The goal is to obtain approval by the CIML in October 2000. A new working group TC8/SC3/WG1 will continue to develop additional test procedures and a format of the test report.

A second topic for this meeting related to the revision of R 117 "Measuring Instruments for Liquids other than Water." A new working group designated TC8/SC3/WG2, which the United States joined with the Netherlands as Convenor, was established to revise R 117.

TC8/SC4 "Dynamic Mass Measurements (Liquids other than Water)" (U.S.)

A joint February 2000 IWG meeting of TC8/SC3 and TC8/SC4 chaired by the United States was held in Paris. The purpose of this meeting was to discuss the merger of OIML R 105 Direct mass flow measuring systems for quantities of liquids (for which the USA is the Secretariat) with OIML R 117 "Measuring systems for liquids other than water" (for which Germany is the Secretariat). A positive vote resulted from the U.S. Secretariat proposal to accept the merger (combined revision) of the two OIML Recommendations. A new Working Group TC 8/SC 4/WG 1 named Combination R 105/R 117 (U.S as Convenor) was formed comprising the same members as TC 8/SC 3/WG 2.

TC8/SC5 "Water Meters" (United Kingdom)

CIML approved a revision of R 49 for "mechanical and electronic" water meters in October 1999. Subsequent meetings of TC 8/SC 5/WG 2 were held to develop a test procedure and test report format - November 1999 at NIST, February 2000 in Paris and May 2000 in Copenhagen. Working Group 2 intends to present an advanced working draft to OIML TC 8/SC 5 which will hold its next meeting in November 2000 in Paris with a view to having a 1st CD by the end of the year.

TC8/SC7 "Gas Metering" (Belgium and France)

An IWG meeting was held in Paris in March 2000 to discuss preparation of a 2nd CD draft OIML Recommendation "Measurement Quantities of Gas Distributed by Pipeline" (to include natural and compressed natural gas). The meeting focused on discussion of comments on the 1st CD draft Recommendation. A major issue raised by the United States involved "restricted technology" by precluding the conversion from mass to volume. The Netherlands, Austria, and the United Kingdom also expressed this concern. A task group to be chaired by the United States was created to recommend revisions needed to permit conversion in the Recommendation.

TC8/SC8 "Gas Meters" (Netherlands)

The Secretariat has sent a questionnaire asking for comments to guide the initiation of a work program to revise R 6 "General provisions for gas volume meters," R 31 "Diaphragm Gas Meters," and R 32 "Rotary Piston Gas Meters and Turbine Gas Meters." The U.S. NWG has been asked to provide comments and to participate in the revision of these Recommendations.

TC9 Instruments for Measuring Mass and Density (U.S.)

OIML Certificates for Components

In response to a request from the NWG, the Secretariat is preparing a 1st CD Recommendation on "Indicators for Weighing Instruments." This draft will be distributed for review and comment by the U.S. National Working Group in August 2000.

Load Cells

The Secretariat prepared an interpretation of the requirements for a manufacturer who has an OIML Certificate of conformance for a model meeting the requirements of OIML R 60 (1991) to get an OIML Certificate of conformance for that same model to the requirements of R 60 (2000). The document entitled "*OIML R 60 Metrological Regulation for Load Cells: Certificate Transformation Requirements*" has been published by BIML; copies are available from TSAP.

TC9 OIML Recommendation 74 "Electronic Weighing Instruments"

A 2nd Working Draft revision of the 1993 edition of OIML R 74 "Electronic Weighing Instruments" is being prepared for distribution to the U.S. National Working Group for comment. The initial focus of this work will be to update the Recommendation to reflect changes in International Electrotechnical Commission (IEC) standards and ensure that its revision is carried out concurrently with the work on OIML D 11 "General Requirements for Electronic Measuring Instruments" that is being coordinated by the Netherlands. The Working Group met at the NCWM Annual Meeting in July and agreed to delete references to checking facilities and retain R 74 as an OIML Recommendation. The next meeting of the Working Group will be held in conjunction with the NCWM NTEP Weighing Sector meeting in Columbus, Ohio in September 2000.

TC9/SC1 "Nonautomatic Weighing Instruments" (Germany and France)

On February 4, 1999, a U.S. NWG Meeting was held. The group discussed some of the open items that should be addressed when R 76 is revised. In April 2000, TSAP contacted the TC9/SC1 Secretariats requesting information on any plans to begin the revision process or to call an IWG meeting and requesting a joint meeting of TC9 to discuss issues with R 60 "Load Cells" and R 76 in 2000. At the time of this report no plans have been announced.

TC9/SC2 "Automatic Weighing Instruments" (United Kingdom)

The Secretariat is considering revision of the following OIML Recommendations: R 50 "Continuous Totalizing Automatic Weighing Instruments (belt weighers); R 51 "Automatic Catch Weighing Instruments;" R 61 "Automatic Gravimetric Filling Machines;" R 106 "Automatic Rail-Weighbridges;" and R 107 "Discontinuous Totalizing Automatic Weighing Instruments (hoppers)." The United States submitted comments and suggested changes to the Secretariat for its consideration.

TC9/SC3 "Weights" (U.S.)

OIML Recommendation 111 "Weights..." - the OIML International Working Group has adopted the Second Committee Draft Revision and Secretariat is in the process of preparing the final draft using the comments received from the working group members. A final draft will be forwarded to CIML for adoption and publication by BIML in the near future.

The International Working Group agreed that OIML R 52 "Hexagonal Weights" will not be withdrawn since its requirements may still be utilized in some developing countries. An updated edition of R 52 will be prepared and submitted to BIML for review and publication after the work on R 111 is complete.

OIML Recommendation R 33 "Conventional Value of the Result of Weighing in Air" (U.S.)

At a May 1998 meeting on R 111, a Working Group composed of representatives from Germany, France, and the United States was formed to review, revise, and draft an International Document based on the OIML Recommendation, R 33 "Conventional Value of the Result of Weighing in Air." The 1st CD has been distributed for review and comment. After the comments have been received and considered a 2nd CD will be prepared for distribution in the fall of 2000.

Report on the Sixth Annual - Asia-Pacific Legal Metrology Forum (APLMF) September 7 to 9, 1999

The APLMF met in Bali, Indonesia, from September 7 to 9, 1999; representatives of 17 of the 22 member economies attended. Bernard Athané, Director of the International Bureau of Legal Metrology, was also present as an observer representing the International Organization of Legal Metrology (OIML). Dr. Chappell represented the United States and was accompanied by Aves Thompson, who represented the NCWM.

Herudi Kartowisastro of the Department of Trade and Industry, Indonesia opened the 6th APLMF meeting with a welcoming address. John Birch, Australia, and Convenor of the APLMF then addressed the meeting. He confirmed the report of the 5th APLMF meeting held in Seoul, Republic of Korea, in October 1998 and provided a report for the APLMF Executive Committee.

Memorandum of Understanding (MOU) for the APLMF

Prior to the meeting, Mr. Birch had provided the members a revised MOU that took into consideration comments made by the United States on a previous draft MOU that had been distributed to members for consideration in February 1999. All members present indicated that they approved the revised MOU and indicated that responsible officials of their economies intended to sign. Dr. Richard Kayser, Director of NIST's Technology Services, signed the MOU for the United States in April 1999.

Working Group Reports

Mutual Recognition Arrangements

Dr. Chappell provided a report on the development of an International Organization of Legal Metrology (OIML) effort to establish a "Mutual Acceptance Agreement on OIML Pattern Evaluations." The status of the development of a 5th draft of the Mutual Agreement and associated Documents was also reported. Mr. Birch reported on an effort to establish an APLMF Mutual Acceptance Arrangement for pattern, or type, approval test reports.

Training

Kerry Marston of Australia, who is Regional Training Coordinator, reported on: (a) the development of a training course on the verification and re-verification of weighing instruments, (b) a train-the-trainer course on "Verification" and "In-service Inspection of Non-automatic Weighing Instruments" held in Bandung, Indonesia from August 24 to September 3, 1999, and (c) development of a "Regional Directory of Training" and a "Regional Network of Training Providers."

Utility Meters

Mr. Birch provided a report on the results of a survey on "Heat Meters" and the "Refurbishment/reconditioning of Utility Meters."

Goods Packed by Measure

John Barker, Chair, of New Zealand led a discussion on (a) "mutual recognition of net content in package labeling" and a report on (b) the progress of the Western European Cooperation in Legal Metrology (WELMEC) Working Group (WG) 6 on the e-mark on packaged products.

Rice Moisture Measurement

Ms. Marston led a discussion of a questionnaire survey on the problem of rice moisture measurement, including a report of a survey of manufacturers of rice moisture measuring equipment. She also gave a report on the effort to identify an expert to conduct a survey of rice moisture measurements in several Asian economies.

Country Reports by Member Economies

Reports were presented by the following member economies: Australia, Canada, Republic of Korea, Lao People's Democratic Republic, Mongolia, Chinese Taipei, and the United States (NCWM – by Aves Thompson).

Reports of Specialist Bodies of the Asia-Pacific Economic Cooperation (APEC)

Reports were provided on the following bodies within the region: APLAC APLMF, APMP, PAC, PASC, APEC Standards and Conformance Subcommittee.

OIML Issues

OIML was asked to give priority to the following projects: (a) development of an OIML Recommendation on “electricity meters” with a test procedure and format of a test report so these instruments can be included in the OIML Certificate System; and (b) the development of a “statistical sampling plans” for application to the re-verification of utility meters.

APLMF Work Program for 1999 – 2000

A detailed APLMF work program for the next year was prepared and presented by Mr. Birch. A copy is available from TSAP.

President of APLMF for 2000 –2001

It was requested that member economies identify someone to consider accepting the position as President (formally Convenor) of APLMF. No candidates were put forth. John Birch was requested to accept the position. He has been the Convenor for 5 years but agreed to accept the position as President on a temporary basis until someone from another member economy agreed to accept the position.

Next Meeting of the APLMF

Chinese Taipei agreed to host the next meeting in October 2000. Dr. Ehrlich will attend the meeting as U.S. Representative. The NCWM will be represented at that meeting by G. Weston Diggs (Immediate Past Chairman of the NCWM) and incoming Chairman of the NCWM National Type Evaluation Program Committee.

APLMF Inter-laboratory Comparisons

Nonautomatic Weighing Instruments.

APLMF has sponsored an intercomparison involving the type evaluation of a nonautomatic-weighing instrument. Participants included the United States, Canada, Australia, and other countries. A report prepared by the Australia National Standards Commission was published in July 2000 and is currently being studied by participating laboratories and other interested parties.

Mass

An intercomparison involving mass has been delayed, pending information from Asian Pacific Metrology Program (APMP), which has also conducted a mass intercomparison. The APLMF Convenor wants to view final results from that intercomparison before beginning an APLMF mass intercomparison.

Load Cells

A load cell intercomparison has been completed involving several laboratories, including NIST, Australia's National Standards Commission (NSC), Japan, United Kingdom, and Germany. This intercomparison was conducted using two 250-kg capacity load cells, and two 20 000-kg capacity load cells. A report is being prepared by the Force Group at NIST and will be published in the Fall of 2000 in the *OIML Bulletin* and NIST's *Journal of Research*.

Flowmeters

Plans for an intercomparison of master flowmeters are being developed. The United States will consider participating in the intercomparison once the test protocol and test facility requirements have been developed and are available for review.

Legal Metrology Seminar for the Americas at the 85th NCWM Annual Meeting

The NCWM, the NIST Technical Standards Activities Program and the NIST Office of Weights and Measures cosponsored a seminar on legal metrology in conjunction with the 85th NCWM in Richmond, Virginia on July 16 to 20, 2000. The attendees included legal metrology and industry representatives from Argentina, Brazil, Canada, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Jamaica, Peru, the United States, Uruguay, and Venezuela. The participants represented many of the members of the Inter-American Metrology System (SIM) "Legal Metrology Working Group," and a formal meeting of this group followed the Seminar. Attendees also observed and participated in the deliberations and other activities of the NCWM throughout the week, interacting extensively with their legal metrology colleagues.

One of the goals of the seminar was to focus the participants on the need to harmonize type evaluation requirements for weighing and measuring instruments. Legal metrology officials provided presentations and information on the legal requirements of each country, answered questions, and expressed a willingness to cooperate in working towards establishing mutual acceptance arrangements to simplify the type evaluation process. Industry representatives from the scale and metering industries talked about their experiences and shared their concerns about the multitude of different type evaluation programs and requirements that they encounter during the process of getting instruments from the design board to field use. Another goal of the Seminar was to highlight the labeling issues faced by importers and exporters of packaged goods throughout the Americas. Emphasis was placed on net quantity of contents labeling and verification procedures and on the need for OIML to develop and implement an international quantity mark system to ease the burden on packagers and legal metrology officials alike to ensure fair competition and consumer protection. These presentations generated much discussion among the participants and resulted in several resolutions (see below) aimed at furthering harmonization efforts in these areas. A formal report detailing the discussions, resolutions, and future activities of the SIM "Legal Metrology Working Group" will be forthcoming.

**Resolutions
Legal Metrology Seminar for the Americas
Richmond, Virginia
July 2000**

Resolution 1-- An inquiry should be distributed to develop a listing of the national responsible body for legal measuring instruments in each member state of the OAS. Note: the instruments listed initially and addressed in the other resolutions should be non-automatic weighing instruments, meters for measuring liquids, and vehicular fuel dispensers.

Resolution 2 -- An inquiry should be distributed to OAS member states to determine the metrological and technical requirements that measuring instruments must meet in order for a manufacturer or importer to market those instruments for legal-for-trade applications.

Resolution 3 -- A Mutual Acceptance Arrangement (MAA) for type evaluation of measuring instruments should be developed for voluntary consideration in the Americas based on the ongoing work on this subject in OIML. This MAA is intended to develop confidence among participants that includes those that accept and issue test reports and certificates of conformity and those that only accept test reports and certificates.

Resolution 4 -- A draft procedure of general requirements for initial verification should be prepared for consideration in harmonizing such procedures within the Americas.

Resolution 5 -- Training courses should be developed and implemented for the testing of measuring instruments during initial and subsequent verification.

Resolution 6 -- An inquiry should be distributed to OAS member states requesting copies of (or references to Internet sites containing) their laws on legal metrology.

Board of Directors

Resolution 7 -- OIML should be requested to give priority for the revision of Document 1 "Law on Metrology."

Resolution 8 -- An inquiry should be distributed to OAS member states requesting:

- Copies of their packaging and labeling laws and regulations (or references to Internet sites containing this information).
- An identification of responsible bodies.

Resolution 9 -- Training courses should be developed for implementing packaging and labeling based on the requirements of OIML Recommendations R79 and R87.

Resolution 10 -- Information should be exchanged among the member states to educate consumers and others in the area of legal metrology.

Resolution 11 -- These resolutions shall be submitted to the SIM Working Group on "legal metrology" for consideration in implementing within their scope of their work by December 31, 2000. Consideration shall be given to pursue those items not to be covered by the SIM working group.

Appendix C

2000 Report of the Metrology Subcommittee

Subcommittee Membership:

Ken Fraley, OK (SWAP), Chair
 Dan Newcombe, ME (NEMAP), Vice Chair
 Ron Balaze, MI (MIDMAP)

L.F. Eason, NC (SEMAP)
 Jose Torres, PR (CaMAP)
 Joe Rothleder, CA (WRAP)

This is an update and status report of the NCWM Metrology Subcommittee since the 2000 Interim Meeting.

ISO 17025 Project

Voting has been completed on ISO DIS 17025, General Requirements for the Competence of Testing and Calibration Laboratories, which is the International Standard that is replacing ISO Guide 25. Both the NIST National Voluntary Laboratory Accreditation Program (NVLAP) and the American Association for Laboratory Accreditation (A2LA) indicated a 2-year phase-in period to require compliance with the new standard. Both accreditation organizations plan to offer ISO 17025 accreditation by mid-year 2000. The State Laboratory Program is preparing for the standard now. Preparation required comparison of ISO 17025 with NIST Handbook 143, Quality Manual Template, and current quality manuals. A database comparing these program publications is posted on the OWM Internet site. A training meeting for ISO 17025 was held at NIST in December 1999 following the NCWM Metrology Subcommittee meeting with NIST management. Training was presented to a group of metrologists who volunteered to work on ISO 17025. Daren Valentine, a representative of A2LA, provided this training. Following the training, the working group provided input for a database, which is being used for training at all regional metrology meetings during 2000, and to update current documentation to ensure compliance with ISO 17025. A checklist for evaluating a program against the ISO 17025 criteria was used by Mike Blacik, MN, to evaluate the NCWM Voluntary Program Assessment Work Group (VPAWG) Retail Motor-Fuels checklist. Georgia Harris presented the completed cross-referencing checklist to VPAWG at the 85th NCWM with additional recommendations to move in the direction of entire program evaluations using ISO quality standards.

Weight Cart Project

After the 1999 NCWM Annual Meeting, NIST circulated the draft of NIST Handbook 105-XX to all laboratories and directors who had previously submitted comments. Comments from the first circulation, results of the 1999 survey that included weight cart information, and laboratory testing information were all included in this circulation. Currently several States are collecting essential follow-up data concerning calibration history and existing cart designs that affect stability. This data will be used by NIST to develop the tolerances and specifications for the next draft version of the handbook. A joint meeting was held with metrologists, industry representatives, and NIST technical advisors at the NCWM Conference. A NIST working group will be established to address concerns including:

- the use and maintenance of weight carts;
- the development of EPOs for scale testing using weight carts;
- the collection of additional data regarding the stability of the carts in use;
- the development of calibration and testing procedures; and
- the further development of the draft 105-series handbook.

NIST Handbook 130 – Reciprocal Acceptance of Accredited Lab Reports

Bruce Adams, MN, and Rick Calkins, Rice Lake, presented proposed changes to the Model Law concerning the voluntary service registration, traceability and accreditation portions. The intent of this project was to propose modifications to 1) allow reciprocal acceptance of calibration certificates from accredited laboratories (whether State or industry) when data supports adequate quality and 2) modify the text to recognize accreditation as the method for ensuring traceability. The drafts and concerns raised by the metrology subcommittee will be posted on the NIST/OWM Internet site during the year to gather additional input prior to developing this as a formal issue before the conference.

NVLAP Accreditation – Status within the State Laboratory Program

Minnesota and Virginia are currently accredited by NVLAP. Seven other State laboratories have applied and are in the accreditation process. Indiana, Illinois, and Washington have submitted their quality manuals and are awaiting on-site audits. Arizona, Maine, Michigan, and Oklahoma have completed on-site audits and are awaiting accreditation. Several other laboratories have indicated they will apply within the coming year.

MeasureNet-Gov

Equipment has been purchased and training was provided in January 2000 for the initial 11 participants in the MeasureNet-Gov program. This program provides computers with WEB video cameras and sound systems that will connect over the Internet with a server at NIST to provide real-time video conferencing among participants. This will allow “virtual” participation in training seminars, collaborative data analysis, problem solving and one-on-one help with computer applications among all participants. The initial equipment for this system has been provided to the 11 pivot laboratories involved in the National Mass Intercomparison. In the event that additional funding becomes available, this system could be expanded to all SLP participants that express interest. MeasureNet-Gov was demonstrated at the NCWM meeting. The program included video tours of the Oklahoma and North Carolina labs through point-to-point contacts and the network server.

Metrology Subcommittee Positions on S&T, L&R, and A&P Committee Items

The metrology subcommittee spent time reviewing and discussing the agenda items before the Conference to address any items of metrological concern. The following section identifies those areas of concern and the general thoughts expressed by the metrologists during discussion.

S&T Committee

320-3 N.1.4.3(a) Vehicle Scales (Test Patterns)

The metrology subcommittee has asked for additional information and input from the S&T Committee on this item (and on developing item Appendix B, Item 1, Livestock Scales) regarding scale test patterns and the impact to the NIST Handbook being developed on weight carts to avoid conflicting requirements. We discussed the impact to the weight cart handbook during our meeting on Tuesday evening.

320-6 Appendix D; Definition of Substitution Test and Test Load

Metrologists have reviewed the definition of substitution test and find no problems with the definition. However, we have also reviewed the concept of substitution testing and the associated uncertainties of what amounts to “a calibration of product for use as a field standard” with “accurately pre-weighed samples.” We are concerned with the additive uncertainties in this test and with trying to meet the H-44 Fundamental Consideration requiring errors on the standard to be less than 1/3 of the applicable tolerance. In reality, we believe that expanded tolerances are being applied in practice.

For example:

Given a 50,000-lb load on a scale with 20-lb divisions, and 10,000 lb of known test weights.

The tolerance on the 10,000 lb of weights is 1 lb. Calibration requirements are such that the testing uncertainty must be less than 1/3 of the tolerance (< 0.33 lb). Given procedures that could accurately determine sample weights to within 1/2 division or 10 lb (which metrologists find unlikely), the first sample would have a minimum uncertainty of 10.33 lb if we simply add the factors. (Using accepted uncertainty guidelines of $k=2$ and 95% with root sum square methods, the uncertainty would be slightly over 20 lb for each substitution test, assuming that the scale actually repeats this well and has a standard deviation for a measurement process of zero and that procedures for accurately pre-weighing samples are followed and no other errors are introduced).

Uncertainty on Standard: 0.33 lb

Uncertainty on product sample 1: 10.33 lb

Uncertainty on product sample 2: 10.33 lb

Uncertainty on product sample 3: 10.33 lb

Total added uncertainty on 40,000-lb load (10,000 lb known standards, 30,000 lb product): 31 lb

Tolerance at 50,000 lb, 20-lb divisions (3 divisions tolerance): 60 lb

1/3 of 60 lb is 20 lb. This example uses half of the tolerance in possible errors.

321-1 Accuracy of Material

The metrologists encourage the use of a reference scale in determining material accuracy for the same reasons given regarding uncertainties in substitution testing. However, the same concerns regarding uncertainties apply to the use of a reference scale under field conditions.

331-1 Recognition of Temperature Compensation

The Metrology Subcommittee believes that it is necessary to address temperature compensation in the code and further considers that temperature compensation in the entire wholesale/retail system, while economically and politically not viable for

petroleum products, is a technically more accurate way to measure volumes. (Related to L&R Item 232-5, we agree that any system implemented must be used for 12-month periods.)

The code, as copied from the LPG code, does not address the adjustable portion of temperature compensators that are set for the specific gravity of the product (versus factory adjusted as in the case of LPG compensators).

More accurate methods for measuring petroleum products also impact taxing structures on petroleum products and environmental concerns such as possible "leakage," which may actually be volume changes based on temperature variation.

L&R Committee

232-3 Stored Tare Weights

The Metrology Subcommittee discourages the practice of using stored tare weights in commercial applications. The practice of using stored tare weights does not lead toward more accurate weighing practices. The proposed allowable differences (3.5.1) are far greater than any other tolerances that are applied to such devices. In the event that stored tare weights are allowed, every effort should be made to regulate and closely evaluate their usage.

A&P Committee

402-1 VPAWG

The Metrology Subcommittee supports the checklist concept and encourages its use by all W&M jurisdictions as a self-assessment tool. Based on our experience with program certification/recognition, we can assure you that the process of self assessment, using a standardized checklist will provide:

- 1) an important tool for uniformity as it is used;
 - 2) a way to identify areas of deficiencies and areas for improvement and assist with prioritization in program development;
 - 3) a way for requesting budgets to support programs because deficiencies and areas for improvement have been identified;
 - 4) ways to identify weaknesses in one area and then share resources across the entire W&M program if they are available in other areas;
 - 5) a way for using a nationally recognized program to identify areas of concern and for improvement the system on a national level.
- We encourage ongoing updating of the checklist – especially along the lines of the ISO 17025 standard that is being used in the calibration and testing arena.
 - We also encourage the A&P Committee to collect completed program self-assessments for review of ways to improve the checklist, for providing estimates for the level of effort that will be required for a valid/effective program recognition system, and for identification of national-level program weaknesses, for a fixed period of time (e.g., two years) and to track participation in such a way as to encourage additional participation. (e.g., scoreboard, maps.)
 - We recommend that the A&P Committee develop additional checklists for other testing areas.
 - We recommend additional investigation into the development of a suitable W&M infrastructure (or recognition body) to support an effective program recognition system that can support program recognition, and in the long term, actual accreditation. We believe there is a critical difference between "voluntary self-assessment" and "peer-review program recognition" that has not been fully explored.

Budget Proposal for 2000 NIST Management Meeting

Appendix I NATIONAL CONFERENCE ON WEIGHTS AND MEASURES

Proposed Funding for Special Needs During Next year's (2000) Budget
Metrology Subcommittee – Submitted by Ron Balaze

Amendment Title: Funding for Annual NCWM and NIST Management Meeting

Committee Priority: One

Description:

Fund travel expenses for an annual NCWM metrology subcommittee and NIST management meeting for the Chair, Vice Chair, and past Chair of the Metrology Subcommittee. Three members of the subcommittee assure the continuity of the meeting from year to year. The NCWM representatives would meet with representatives from NIST Technology Services (OWM and the Calibration Program), Manufacturing Engineering (mass, force, and dimensional), and Chemical Sciences Technology (fluid flow, volume, and temperature).

Rationale:

On November 28th and 29th, 1999, Ron Balaze, Ken Fraley, and L.F. Eason met with NIST management as described in this report.

Continuation of this meeting as an annual event will reinforce and expand the dialog that was initiated during the past few meetings. It will serve to review the needs of the State Laboratory Program and the National Conference on Weights and Measures in support of accurate measurement standards. It will help to ensure that the States have the technical support, measurement standards, and services needed to enforce legal requirements and meet the needs of indigenous agencies and industry. It will also serve to communicate the scope and effects of State weights and measures programs and metrology laboratories to the relevant groups at NIST. It is critical that communication be maintained and enhanced since our work (regulatory and industrial) depends on traceability to NIST.

Resource Narrative:

Maximum of \$1,500 per person each year for travel and per diem for three representatives to attend a 2- to 3-day meeting.
Maximum total expense of \$4,500.00

Proposed Source of Funding: General revenues.

Note:

The BOD supports the concept of this activity and has budgeted \$1000.00 to help cover expenses. Other sources of revenue will need to be developed to continue the meeting in its present format. The Board asked that the subcommittee follow the normal conference practices of asking the employing agency to pay for the travel first and to coordinate meetings with other events and training where possible.

Appendix D

Handbook 44 Working Group Proposed Work Plan

September 26, 1999

- 1) Focus on organization and format first.
- 2) Include a General Code for the following three main areas:
 - a) weighing devices
 - b) measuring devices
 - c) other devicesThese three areas will be followed by specific device codes for that area.
- 3) Within each "General Code" section, we will group Section 1.1 criteria and common/general device criteria within broad categories such as "Specifications," "User Requirements," etc.
- 4) The order of the sections within both specific and general codes (e.g., "Specifications," "Notes," etc.) needs to be revised and each code section uniformly formatted.
(Note: Consider formats used by other organizations such as the International Organization of Legal Metrology [OIML], the National Fire Protection Association [NFPA], Measurement Canada, etc.)
- 5) The "Fundamental Considerations" section should be moved to the front.
- 6) Move the definitions to specific codes.
(Note: Each definition will need to be reviewed and identified as a "general" definition applicable to all weighing and measuring devices or a "specific" device definition specific to individual device types.)
- 7) Move toward application-driven requirements.
- 8) Decide how to incorporate/relate Handbook 44 (H-44) to other criteria such as type evaluation and field testing procedures.
For example, maintain the current content of H-44 as a regulatory document with separate Examination Procedures Outlines (EPO's) and type evaluation criteria, or incorporate EPO's and type evaluation criteria into H-44.
- 9) If points 1-8 are acceptable, create a work plan for further developing each area. Smaller work groups will be used to develop various areas.

Appendix E

Sample Joint Sector Meeting Agenda						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 – 12:00	--	Belt Conveyor Scale Sector	Weighing Sector	Weighing Sector	Measuring Sector	Measuring Sector
12:00 – 1:00	--	Lunch	Lunch	Lunch	Lunch	Lunch
1:00 – 5:00	Weighing Laboratories Meeting	Belt Conveyor Scale Sector	Weighing Sector	Joint Sector Session for General Issues*	Measuring Sector	Measuring Laboratories Meeting
<p>* Examples of "Joint Issues":</p> <ul style="list-style-type: none"> - Administrative Issues - Changes in administrative policies and procedures, Sector membership and operation criteria, etc. - Common General Technical Issues - General Code issues such as marking requirements, permanence of markings, etc. - Items of general impact on range of device types such as evaluation of software, audit trails, remanufactured equipment, etc. 						

Appendix F**NCWM Budget for Fiscal Year 2001**

REVENUE	FY2001 Budget
<i>Dues</i>	\$157,380.00
<i>NTEP</i>	\$403,000.00
<i>Publications</i>	
Handbook 44	\$ 2,000.00
Handbook 130	\$ 750.00
Handbook 133	\$ 2,000.00
Publication 14	\$ 1,500.00
Consumer Brochures	\$ 250.00
<u>Shipping Collected</u>	<u>\$ 1,500.00</u>
Total Publications	\$ 8,000.00
<i>Conference Revenue</i>	
<u>Interim Meeting</u>	
<u>Registration Fees</u>	<u>\$ 23,000.00</u>
Total Interim Meeting	\$ 23,000.00
<u>Annual Meeting</u>	
Registration Fees	\$ 50,000.00
Guest Registration Fees	\$ 7,500.00
Special Event Only Fees	\$ 2,000.00
Exhibitor Fees	\$ 600.00
Guest Tour Registration	\$ 3,000.00
<u>Special Event Sponsorship</u>	<u>\$ 12,000.00</u>
Total Annual Meeting	\$ 75,100.00
Total Conference Revenue	\$ 98,100.00
Interest	\$ 30,000.00
<hr/> <hr/>	
TOTAL REVENUE	\$696,480.00
COST OF SALES	
<i>Membership Expense</i>	
Office Supplies	\$ 100.00
Postage	\$ 2,000.00
Applications	\$ 400.00
Membrshp Renewal Brdcast FAX	\$ 500.00
Duplicating	\$ 100.00
<u>Management Fee</u>	<u>\$ 7,210.00</u>
Total Membership Expense	\$ 10,310.00

Board of Directors

NTEP

Management Fee	\$260,000.00
Postage	\$ 6,000.00
General Travel	\$ 12,000.00
Interim Meeting Travel Expense	\$ 8,000.00
Interim Mtg Mgmt Fee	\$ 5,150.00
Annual Mtg Mgmt Fee	\$ 5,150.00
Belt Conveyor Sector Meeting	\$ 5,000.00
Weighing Sector Meeting	\$ 10,000.00
Grain Moisture Sector Meeting	\$ 7,500.00
Measuring Sector Meeting	\$ 7,500.00
Internet Posting	\$ 10,000.00
Staff Travel	\$ 20,000.00
Insurance	\$ 5,000.00
Duplicating	\$ 400.00
Legal Fees	\$ 7,500.00
Laboratory Travel	\$ 12,000.00

Total NTEP **\$381,200.00**

Publications

Management Fee	\$ 10,300.00
Postage	\$ 2,000.00
Publications Brochure	\$ 500.00
Duplicating	\$ 50.00
Handbook 133	\$ 1,000.00

Total Publications **\$ 13,850.00**

Conference Expenses

<u>Interim Meeting</u>	<u>\$ 50,175.00</u>
Total Interim Meeting	\$ 50,175.00

<u>Annual Meeting</u>	<u>\$ 96,200.00</u>
Total Annual Meeting	\$ 96,200.00

Total Conference Expenses **\$146,375.00**

TOTAL COST OF SALES \$551,735.00

Gross Profit \$144,745.00

EXPENSES

Board of Directors

Travel	\$ 15,000.00
Chairman's Travel	\$ 10,000.00
Chair Elect Travel	\$ 7,500.00
Duplicating	\$ 400.00
Board Governance Seminar	\$ 2,500.00
Food & Beverage	\$ 2,000.00

Total Board of Directors **\$ 37,400.00**

<i>Committee Contingency Fund</i>	\$ 7,500.00
<i>Legal & Accounting</i>	
Legal Fees	\$ 4,000.00
<u>Annual Audit</u>	<u>\$ 5,000.00</u>
Total Legal & Accounting	\$ 9,000.00
<i>Miscellaneous Expenses</i>	
Office Supplies	\$ 250.00
Postage	\$ 1,000.00
Duplicating	\$ 400.00
Telephone	\$ 4,000.00
Bank Service Fees	\$ 200.00
Charge Card Discount Fees	\$ 2,000.00
Printing	\$ 1,500.00
Legislative Brochure	\$ 0.00
OWM Database Conversion	\$ 0.00
Insurance	\$ 2,500.00
<u>Associate Member Fund</u>	<u>\$ 15,000.00</u>
Total Miscellaneous Expenses	\$ 26,850.00
<i>Administrative Mgmt Fees</i>	
Headquarters Office	\$ 20,600.00
Financial	\$ 18,540.00
<u>Board Governance</u>	<u>\$ 3,090.00</u>
Total Administrative Mgmt Fees	\$ 42,230.00
<i>Website</i>	
Domain Name	\$ 50.00
Design & Development Fee	\$ 5,000.00
Management Fee	\$ 8,500.00
<u>Maintenance Fees</u>	<u>\$ 2,400.00</u>
Total Website	\$ 15,950.00
<i>Storage Space Rental</i>	\$ 900.00
TOTAL EXPENSES	\$139,830.00
Operating Profit	\$ 4,915.00
Net Profit / (Loss)	\$ 4,915.00

Report of the Laws and Regulations Committee

Steve Morrison
Chairman
San Luis Obispo County, California

Reference
Key Number

200 Introduction

This is the report of the Laws and Regulations Committee (Committee) for the 85th Annual Meeting of the National Conference on Weights and Measures (NCWM.) It 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 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 agenda items 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. Consent calendar items are marked with a "VC." Items marked with an "I" after the item number are for information. Items marked "W" have been withdrawn from consideration. Items marked with a "D" after the key number are developing issues. The developing designation indicates an item has merit; however, the item is returned back to the submitter for further development before any action at the national level. Table B lists the appendices to the 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 recommendations to amend National Institute of Standards and Technology (NIST) Handbook 130, 2001 edition, "Uniform Laws and Regulations," or NIST Handbook 133, "Checking the Net Contents of Packaged Goods," Third Edition and Supplements 1 (1990), 2 (1991), 3 (1992), 4 (1994), and other amendments adopted in 1998 and 1999 that have not been published. Revisions proposed by the Committee are shown in **bold face print** by ~~erossing 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**. Proposals presented for information are shown in *italic* type unless identified as informational. The section mark, "§," is used in most references in the text and is followed by the section number and title, (for example, § 1.2. Weight.) When used in this report, the term "weight" means "mass."

Subject Series

Handbook 130 - General	210 Series
Uniform Laws	220 Series
Weights and Measures Law (WML)	221 Series
Weighmaster Law (WL)	222 Series
Engine Fuels, Petroleum Products, and Automotive Lubricants Inspection Law (EFL)	223 Series
Uniform Regulations	230 Series
Packaging and Labeling Regulation (PLR)	231 Series
Method of Sale of Commodities Regulation (MSCR)	232 Series
Unit Pricing Regulation (UPR)	233 Series
Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices Regulation (VREG)	234 Series
Open Dating Regulation (ODR)	235 Series
National Type Evaluation Regulation (NTER)	236 Series
Engine Fuels, Petroleum Products, and Automotive Lubricants Regulation (EFR)	237 Series
Interpretations and Guidelines	238 Series
Price Verification	239 Series
NIST Handbook 133	250 Series
Other Items	260 Series

Table A
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221-1	W Retail Price Posting	3
221-2	VC Reference to NCWM Adoption of NIST Handbooks	4
221-3	W Bonus Offers on Package Labels	5
231	Packaging and Labeling Regulation	5
231-1	D Permit Multiple Unit or Total Prices to Appear on a Package Label	5
231-2	W Principle Display Panel - Regulatory Interpretation	5
232	Method of Sale of Commodities Regulation	6
232-1	V Construction and Industrial Plywood	6
232-2	V Sand, Rock, Gravel, Stone, Paving Stone, and Similar Materials	8
232-3	D Stored Tare Weights	9
232-4	W Canned Clams	10
232-5	I Temperature Compensated Sale of Petroleum Products	10
236	Uniform Regulation for National Type Evaluation	10
236-1	I Ensuring the NTEP Regulation is Consistent with NTEP Policies	10
236-2	VC NCWM Certificates of Conformance	11
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239-1	W Limit Time Allowed for Intentional Undercharges	13
250	NIST Handbook 133	13
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260	Other Items	17
260-1	W Electronic Price Labels	17

Table B
Appendices

Appendix	Title	Reference Key	Page
A	Guidelines for Administrative Decisions on Premium Diesel	237-2	19

Table C

Reference Key Number	Voting Results				Results
	House of Representatives		House of Delegates		
	Yeas	Nays	Yeas	Nays	
221-2	44	0	53	0	Passed
232-1	25	11	27	35	Did Not Pass
232-2	41	1	65	0	Passed
236-2	44	0	53	0	Passed
238-1	44	0	53	0	Passed
200 Committee Report in its Entirety	42	0	65	0	Passed

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

221 Weights and Measures Law

221-1 W Retail Price Posting

Status: The Committee accepted comments on this issue at the Interim Meeting in 2000. For further information, contact Don Onwiler, Nebraska Department of Agriculture/Division of Weights and Measures, telephone: 402-471-4292, or at donlo@agr.state.ne.us via email.

Source: The Central Weights and Measures Association (CWMA).

Background: The Uniform Weights and Measures Law (UWML) does not require retailers to display the selling price of products for consumers. As a result, jurisdictions do not have a standard to guide them if they choose to amend their laws to require price information. When price posting is not required, consumers find making value comparisons difficult. The CWMA would like to develop a standard to guide jurisdictions that want to adopt retail price posting laws.

Proposal 1: The CWMA recommends amending the WML to include a price-posting requirement:

Section XX. Price Posting

Whenever a commodity is being sold for a non-negotiable price, the price shall be clearly and conspicuously posted or displayed by the retailer prior to the sale of the commodity. If a commodity is being sold at a discounted price, ~~the exact amount~~ of the discount, or the discounted price shall be clearly and conspicuously posted or displayed by the retailer prior to the sale of the commodity.

Proposal 2: The Southern and Western Weights and Measures Association (SWMA) supports the following amendments to further develop this item:

Section XX. Price Posting

Whenever a commodity is being sold for a non-negotiable price, the price shall be clearly and conspicuously posted or displayed by the retailer prior to the sale of the commodity. If a commodity is being sold at a discounted price, ~~the exact amount~~ of the discount, or the discounted price shall be clearly and conspicuously posted or displayed by the retailer prior to the sale of the commodity. NIST Handbook 44, Section 3-30 as it applies to contract sales of petroleum motor fuel is exempt from this section.

The Food Marketing Institute (FMI) and other retail trade associations do not support adopting price posting requirements. The FMI is concerned that the proposed wording could be interpreted to require retailers to post the regular price, the monetary value of the discount, and the sale price on all discounted items. If this is the intent of the requirement, according to FMI, retailers will have a costly burden, and consumers will have limited benefits. The Committee believes the intent of the proposal is to have retailers post only the price at which an item is offered for sale. If this is correct, the requirement could be met with a shelf tag, sign, or individually priced items.

The Committee requested that the CWMA work with representatives of the retail industry to develop this item. The Committee suggested that the CWMA establish an informal work group to develop the proposal and recommend good pricing practices for specific price accuracy issues related to percent off items (e.g., 70 percent off all items on a shelf or rack in a department store). The Committee also requested that the work group recommend how retailers can provide more precise information on package labels and signs regarding discounts offered to frequent shopper club cardholders.

Regional Action: The Southern Weights and Measures Association (SWMA) supports developing this item further. To ensure that the proposal receives comments from as many interested parties as possible, the SWMA recommends that trade associations and other interested parties be informed about the issue. The SWMA is concerned about the impact the proposal will have on the many businesses that post a “non-negotiable” price. The SWMA recommends that the group define the term “non-negotiable.” Marketplace history indicates that the “non-negotiable” price may, in fact, be negotiable depending on factors such as the number of items a consumer buys, or the motivations of the seller.

This item was discussed in some detail at the Northeastern Weights and Measures Association (NEWMA) meeting. The NEWMA report encouraged the Committee to make sure that the requirement is consistent with the price verification procedures and does not conflict with any Handbook 44 requirements. NEWMA officials were most concerned that there might not be uniformity in adoption of this item since not all jurisdictions adopt every Handbook 130 requirement. NEWMA officials also questioned if the requirement would apply prior to sale or during the time the item was on sale?

Interim Meeting Action: The Committee voted to withdraw this item. This Committee felt that the item was not fully developed at the Regional level.

221-2 VC Reference to NCWM Adoption of NIST Handbooks

(This Item Was Adopted)

Source: Central Weights and Measures Association

Background: Currently twenty-seven States automatically adopt NIST Handbook 133 by reference. For NIST Handbooks 44 and 130, the UWML refers to editions of those handbooks that the NCWM has adopted. In the case of NIST Handbook 133, however, paragraph (m) of Section 12 of the model law does not include the reference to NCWM adoption for Handbook 133. If the model law does not require the handbook to be adopted by the NCWM, the most current edition published becomes State law, whether it has been adopted by the NCWM or not. The proposed amendment resolves this omission and clearly specifies that the appropriate version of the handbook is the edition adopted by the NCWM.

Recommendation: Amend Section 12 of the Uniform Weights and Measures Law as follows:

Section 12. Powers and Duties of the Director (m) weigh, measure, or inspect packaged commodities kept, offered, or exposed for sale, sold, or in the process of delivery, to determine whether they contain the amounts represented and whether they are kept, offered, or exposed for sale in accordance with this Act or regulations promulgated pursuant thereto. In carrying out the provisions of this section, the director shall employ recognized sampling procedures, such as are adopted by the National Conference on Weights and Measures and are designated published in National Institute of Standards and Technology Handbook 133, “Checking the Net Contents of Packaged Goods.”

Interim Meeting Action: The Committee voted to make this a Voting item after verifying that the National Conference on Weights and Measures (NCWM) was the correct title when referring to the NCWM, instead of National Conference on Weights and Measures, Inc. No further comments were received.

221-3 W Bonus Offers on Package Labels

Source: Southern Weights and Measures Association (SWMA)

Background: According to the SWMA report Section 15. Misrepresentation of Quantity must be amended to mandate that retailers clarify terms found in flyers, mailers, signs, packages, etc. stating language such as "10% More," "18% Larger," "25% Free," "Save 50%," etc. One of the basic precepts of weights and measures is that the price or quantity of a package may not be presented in any manner calculated or tending to mislead, or in any way deceive a person. Another principal is to ensure that consumers have accurate information that will allow them to make informed decisions as to the cost and value of a packaged commodity.

According to the SWMA report, this precept is being violated daily across the United States by countless packers, manufacturers, and retailers. Weights and measures officials have allowed this to escalate into an accepted practice. Advertising in the form of labels attached to packages, flyers and mailers, and signs proliferate the marketplace proclaiming "10% MORE," "18% LARGER," "25% FREE," "SAVE 50%." There can be no other possible interpretation of these statements; they are obvious qualifications of the package contents and tend to exaggerate the amount, or value, of the package. In many instances, the basis for these exaggerations is so vague the consumer has no possible way of understanding the actual amount, cost, or value of a particular commodity. The consumer is not given any basis for the declaration such as "more than what," "a savings based upon what price," or in the case of "FREE" product, just how much product is free. According to the SWMA, report this problem is so widespread and all inclusive that there is no way it can be corrected by a single jurisdiction, State, or regional association., It must be addressed by the National Conference on Weights and Measures as a united organization on behalf of the American consumer. According to the SWMA report, this amendment is needed to ensure that all packers, labelers, etc. are conforming to the same advertising and labeling guidelines and to assist consumers in making wise choices.

Interim Meeting Action: The Committee voted to withdraw this item after learning that the Federal Trade Commission (FTC) has guidelines addressing deceptive pricing. The FTC guide is located in the Code of Federal Regulations Part 16.

231 Packaging and Labeling Regulation

231-1 D Permit Multiple Unit or Total Prices to Appear on a Package Label

Source: Southern Weights and Measures Association (SWMA)

Background: According to the SWMA, retailers are making widespread use of "Bonus Cards," "VIP Cards," etc., and placing a wide range of multiple unit and total prices on labels. This approach confuses consumers about the price they are paying. Currently, Section 20. Declaration of Unit Price on Random Weight Packages, of the Uniform Weights and Measures Law states, "In addition to the declarations required by Section 19 of this Act, any package being one of a lot containing random weights of the same commodity, at the time it is offered or exposed for sale at retail, shall bear on the outside of the package, a plain and conspicuous declaration of the price per kilogram or pound and the total selling price of the package."

The SWMA recommends that the Committee work with Food Marketing Institute (FMI) and other retail trade associations, scale manufacturers, and other interested parties to develop a standard that would allow up to two (2) unit prices and total prices on random weight packages.

Interim Meeting Action: The Committee voted to maintain this item as Developmental. The Southern Association will work with Gale Prince of the Kroger Company to develop this item further.

231-2 W Principal Display Panel – Regulatory Interpretation

Source: Nebraska Division of Weights and Measures

Background: This item was brought to the NCWM Interim Meeting to be considered for adding to the Committee agenda as an emergency item due to legislative action pending in Nebraska that may be in conflict with the Fair Packaging and Labeling Act and 21 CFR 101. This item generated much interest and concern from conference members

in attendance at the interim meeting, not only on the proposal, but also regarding the use of emergency procedures to bring it forward.

When an inspector is determining compliance with requirements of the Handbook 130 Packaging and Labeling Regulation, he/she must identify which portion, or portions, of the package the manufacturer has designated as the principal display panel. In the case of packages manufactured at a location other than the retail outlet, it is that part, or those parts, of a label that is, or are, so designed as to most likely be displayed, presented, shown, or examined under normal and customary conditions of display and purchase. The issue arises when the retailer is also the manufacturer, such as for meat, cheese, deli, and bakery items.

In 1970, the NCWM adopted an interpretation of the definition of the Principal Display Panel (**2.7 Principal Display Panel or Panels**) to aid the inspector and manufacturer in determining which panel has been designated by the manufacturer as the Principal Display Panel. That interpretation is consistent with the FDA 7560 interpretation found in NBS Handbook 108 Weights and Measures Labeling Handbook, which reads:

“It is important to note, however, that the presence of either a statement of identity or a statement of contents declaration alone on a label panel does not necessarily qualify the surface as a principal display panel. The criterion to be used is whether the manufacturer, either by design or through trade practice, customarily designates a specific package surface, or surfaces, for display of the product at retail.”

A recent interpretation of **§2.7 Principal Display Panel or Panels** was provided to the Nebraska Legislature in direct contradiction to the above. This causes a situation where weights and measures officials are unsure how to determine which portion of the package is the Principal display panel. The method used for the past 30 years is now in question. This item was offered by Nebraska as a reaffirmation of the original FDA interpretation, as adopted by the NCWM in 1970, in the absence of a later interpretation to supersede it.

Interim Meeting Action: Based on testimony from industry and some state officials about the timing of the issue and concerns over due process, and because Nebraska received an FDA interpretation which they believe would provide support to Nebraska Weights and Measures regarding immediate state legislation, the Committee voted to withdraw the item with the support of Nebraska. The Committee recognizes the importance of this item and intends to hear it in the future after it has been submitted through regional associations.

(Editorial Note: Following the January NCWM Interim Meeting, additional information was received from FDA concerning § 2.7 Principle Display Panel or Panels. To assist weights and measures officials and industry in their interpretation and implementation of § 2.7, NIST will provide a NIST technical memo with further clarification of the FDA and FTC regulations along with supporting documentation. For information on obtaining a copy of this technical memo, please contact NIST by phone at 301-975-4868 or via the Internet at www.nist.gov/owm/)

232 Method of Sale of Commodities Regulation

232-1 V Construction and Industrial Plywood

(This Item Was Not Adopted)

Source: Laws and Regulations Committee

Discussion: The U.S. Department of Commerce-sponsored group accountable for Voluntary Product Standard (VPS) PS 1-95 asked the Committee to amend NIST Handbook 133 to recognize the accuracy provisions and tolerances of the VPS for plywood. A jurisdiction responding to a consumer complaint about the thickness of plywood sheeting conducted a survey in several retail outlets and found that the label claims of several manufacturers were incorrect. The jurisdiction notified the manufacturers of the survey results and advised them of the weights and measures legal requirements. In response to this notification, the manufacturers advised the jurisdiction that they manufacture plywood sheeting to meet NIST Voluntary Product Standard (VPS) PS 1-95 “Construction and Industrial Plywood.” This standard includes requirements for dimensions and tolerances, moisture content, and grade marking. Those manufacturers have been advised that plywood sheeting must be accurately labeled, and that thickness measurements must meet the lot average and individual unit requirements of NIST Handbook 133. The manufacturers were notified that the thickness and dimension tolerances specified in the Voluntary Product Standards are not consistent with the maximum allowable variations specified in NIST Handbook 133 and that a Voluntary Product Standard does not pre-empt State or local requirements. At the 1998 Interim Meeting, representatives of the plywood and hardwood industries presented information on their industry’s current measurement and labeling practices. The industry representatives requested that the Committee defer

action on this item until the various lumber industry trade associations had time to develop a consensus proposal for the NCWM to consider. The Committee agreed to withdraw this issue and provide technical assistance as industry develops its proposal. Following the 1998 Interim Meeting, the American Plywood Association (APA) requested that the L&R Committee consider the industry's original proposed addition to Handbook 130. According to the APA, its proposal would recognize the methods of sale that have been accepted in the marketplace since the 1940s. The proposal is based on the NIST Voluntary Product Standards developed in a consensus process with input from producers, users, and general interest parties. The industry proposal, modeled after the precedent established for lumber, calls for full disclosure. The APA is prepared to provide information to the retail trade to assist in ensuring that the consumer is fully informed. Wood structural panels have been successfully traded since the 1930s. According to the APA, actual dimensions have rarely been an issue of commerce. The structural performance of the product and adequate performance under building law have always been primary industry focus. Dimensional tolerances specified in the Product Standards are not consistent with NIST Handbook 133, yet they have served commerce well as evidenced by the rare instance of dimensional dispute. According to the APA, the primary issues that arise between buyer and seller relate to the quality of the glue bond, grade, workmanship, and occasionally other performance characteristics rather than dimensions.

Regional Action: The SWMA recognizes that NIST Handbook 130, Method of Sale Regulation, provides for the sale of softwood and hardwood lumber based on nominal dimensions. Therefore, the SWMA recommended that the NCWM L&R Committee work with the APA and the Engineered Wood Association to develop language that is consistent with the existing methods of sale for softwood and hardwood lumber to address the dimensional requirements for structural wood panels. The Western Weights and Measures Association does not support the APA proposal. It submitted an alternative proposal to amend the Maximum Allowable Variations for manufactured wood panels. The Northeastern Weights and Measures Association (NEWMA) recommended that the Committee expand this issue to include an investigation of the marking and labeling practices of the entire manufactured wood industry. NEWMA also suggested that the best alternative was to permit the use of nominal sizes but require full disclosure of actual dimensions.

Committee Recommendation: Officials and industry representatives provided the Committee with a great deal of input on this issue. Most of the parties agreed that the best approach would be to permit the use of nominal sizes but also require full disclosure of actual dimensions. The Committee believes that consumers will be fully informed if both the nominal and actual dimensions are clearly displayed at the point of sale or wherever nominal sizes are displayed in retail stores (i.e., on shelf labels adjacent to the product where it is displayed or on the wood products themselves.) At the Interim Meeting, wood industry representatives agreed to provide information to the retail trade to assist them in the labeling of these products. The Committee recommends adopting a new Section 2.29. "Wood and Cellulose Based Panels" that is presented below.

2.29. Wood and Cellulose-Based Panels

Applies to wood or cellulose-based panels used for construction, industrial and do-it-yourself projects. Such panels include, but are not limited to:

- a. Plywood
- b. Oriented Strand Board (OSB) and waferboard
- c. Hardboard
- d. Particleboard
- e. Medium Density Fiberboard (MDF)
- f. Cellulosic Fiberboard
- g. Wood Fiber Cement

2.29.1 Quantity

Representations shall be in terms of the length, width, and thickness. Nominal or specified dimensions may be used if the actual dimensions are prominently displayed on any retail display or advertisement of Wood and Cellulose Based Panels and the term ("nom") or specified is also used in conjunction with any representation of nominal or specified dimensions on such retail display or advertisement.

Action at the 1999 Regional Meetings:

The Southern and Central Weights and Measures Associations (SWMA & CWMA) supports the Committee's proposal to permit the use of nominal sizes if actual sizes are also displayed to consumers. The Northeastern Weights and Measures

Association (NEWMA) continues to support the Committee's original recommendation. According to the NEWMA report there was some discussion that the split vote was due to the emotional appeal of some of the arguments that were expressed on the floor. The NEWMA believes that "to advertise these items in other than nominal sizes is simply unworkable." Actual dimensions provided at the point of sale will provide consumers with specific needs with the necessary information to make valid comparisons. This applies equally to sub-cuts of the standard 4 x 8 sheet.

The Western Weights and Measures Association opposes the Committee's proposal and submitted an amended method of sale that is shown below.

Western Weights and Measures Association Recommendation: Adopt a new method of sale for wood and cellulose-based panels to require the use of actual size designations as presented below.

2.29. Wood and Cellulose-Based Panels

Applies to wood or cellulose-based panels used for construction, industrial and do-it-yourself projects. Such panels include, but are not limited to:

- a. Plywood
- b. Oriented Strand Board (OSB) and wafer board
- c. Hardboard
- d. Particle board
- e. Medium Density Fiberboard (MDF)
- f. Cellulosic Fiberboard
- g. Wood Fiber Cement

2.29.1. Quantity

Representations shall be in terms of the length, width, and thickness. Nominal or specified dimensions may be used if the actual dimensions are prominently displayed on any retail display or advertisement of Wood and Cellulose-Based Panels and the term nominal ("nom") or specified is also used in conjunction with any representation of nominal or specified dimensions on such retail display or advertisement.

Interim Meeting Action: The Committee voted to move the original proposal forward as a Voting item and withdraw the proposal submitted by the Western Weights and Measures Association.

232-2 V Sand, Rock, Gravel, Stone, Paving Stone, and Similar Materials Sold in Bulk.

(This Item Was Adopted)

Status: The Western Weights and Measures Association (WWMA) developed this item. For further information, contact John Moore, AZ Weights and Measures Department, Telephone: 602-255-5211, or by Fax on 602-255-1950.

Source: The Western Weights and Measures Association (WWMA)

Background: According to the WWMA, these commodities are sold by cubic measure, dimensions, weight, and area. Methods of sale that are not uniform for the same product at all retail locations frustrate value comparison. The intent is to develop a method of sale for each commodity to ensure that consumers can compare values. The Northeastern Weights and Measures Association (NEWMA) supports the development of this issue.

Regional Action: The WWMA submitted the following method of sale for consideration:

2.2X. Sand, Rock, Gravel, Stone, Paving Stone, and Similar Materials when Sold in Bulk.

2.2X.X. Method of Retail Sale -- All sand, rock, gravel, stone, paving stone, and similar materials kept, offered, or exposed for sale must be sold as follows.

- a. **Top-soil, fill dirt, aggregate or chipped rock, sand (including concrete and mortar sand), decomposed granite, landscape type rock, and cinders must be sold by the cubic meter or cubic yard or by weight.**
- b. **Flagstone must be sold by weight.**
- c. **Dimensional cut stone must be sold by square meter, square foot, or weight.**

This requirement does not apply to single stones with engraving such as grave-stones, natural or manmade artwork, landscape boulders, and pre-cast uniform size blocks.

Interim Meeting Action: The Committee received no comments. The Committee supports the proposal and voted to change the designation to Voting.

232-3 D Stored Tare Weights

Source: Southern Weights and Measures Association (SWMA)

Background: According to the SWMA report, vehicle tare weights are being used for lengthy time periods and have often been found to be incorrect. The errors found in initial surveys range from a truck weighing 8,900 lb less than the stored tare to trucks that weighed 2,680 lb more than the stored tare. A load of sand or gravel at a cost of \$5.50 per ton with a tare error of 750 lb has a monetary value for each weighing error of \$2.06. If this error is multiplied by 4 transactions per day per truck times 240 working days, it results in an overcharge of more than \$1,977. Since the practice of using stored tare is used by other types of businesses (e.g., landfills, asphalt plants, etc.) where prices may reach \$70 or more per ton, an error of 750 lb in the tare weight of a truck would equal \$26 per weighment. If this truck were involved in four transactions per day for 240 working days the overcharge would total more than \$25,000.

The SWMA recommends that the Committee:

1. Develop a method of sale regulation for stored vehicle tare weights. Require scale operators to maintain accurate and up to date tare weights. The SWMA submitted the following suggested requirements for a new method of sale.
 - 3.5 – Vehicle Tare Weights - Whenever stored vehicle tare weights are employed in the sale of commodities, the following conditions and requirements shall apply:**
 - 3.5.1 - Allowable differences. - The difference between actual tare weight and stored tare weight must not exceed plus or minus 272 kg (600 lb).**
 - 3.5.2 - All stored vehicle tares shall be accurately determined to the nearest scale division.**
 - 3.5.3 - Stored vehicle tares shall be verified at regular intervals, not to exceed 3 months.**
2. Adopt appropriate allowable difference between actual tare weight and stored tare weight.
3. Develop an examination procedure outline, and enforcement procedures.
4. Collect data from States that have not yet responded to a survey conducted by the States of Maryland and North Carolina.

The Northeastern Weights and Measures Association (NEWMA) supports developing this item. According to the NEWMA report, some States already prohibit stored tares in present enforcement programs, but many fear that the practice is fairly widespread. NEWMA officials support the concept of timely verification of stored tare weights. Stored tare weights should also be subject to increased surveillance by officials during device inspections. There was also some question that stored tare weights are inconsistent with the provisions of the Uniform Weighmaster Law because the tare weight was not actually measured by the weighmaster thus invalidating any weight ticket issued. The Western Weights and Measures Association (WWMA) recommends that this item be further developed by considering other States' tare

regulations.

Interim Meeting Action: The Committee received comments from the States of Maryland and Mississippi. Maryland requested that this item be maintained as developmental and suggested further work to be done by the Southern Weights and Measures Association. Mississippi testified that stored tare weights are illegal in its jurisdiction. The Committee voted to maintain this item as Developmental. The Committee believes that further work should be done on a regional level to clarify the issue and fully develop the proposal.

232-4 W Canned Clams

Source: The Western Weights and Measures Association (WWMA)

Status: This item is being developed by the Western Weights and Measures Association (WWMA). For further information, contact Steve Morrison, San Luis Obispo County, California at 805-781-5910, or at sfmorrison@Co.Slo.Ca.Us via email. The Committee accepted comments on this issue at the 2000 Interim Meeting.

Background: The WWMA recommends developing data to justify adopting a method of sale that would require that canned clams be sold by drained weight.

Interim Meeting Action: Testimony from representatives of the clam industry and FDA revealed that clam juice has nutritional value and is included in the nutritional information required under the Nutritional Labeling and Education Act. Based on this information the appropriate method of sale is by net weight. The Committee feels that the FDA should develop a "Standard of Identity." The Committee voted to withdraw this item and urges FDA to develop a "Standard of Identity" for Clam products.

232-5 I Temperature Compensated Sale of Petroleum Products

Source: Northeastern Weights and Measures Association (NEWMA)

Background: NEWMA is proposing a Specifications and Tolerances Committee item to add temperature compensation to the Vehicle Tank Meter Code and recognize it for all devices in the Liquid Measuring Device code. According to the NEWMA report, a parallel change needs to be made to the Method of Sale Regulation to permit compensated sales of petroleum products. NEWMA notes that Pennsylvania, New Hampshire, Maine, and Canada permit compensated sales in areas like retail sales of home heating oil and retail sales of gasoline. The development of stable electronic temperature compensation permits compensated transactions to take place accurately and inexpensively. This new technology is the reason for the reemergence of this issue that the Committee first explored in the 1970s. According to NEWMA, the lack of specific guidance in Handbook 130 does not help. States are forced to use the lack of standards in Handbook 44 to try to stop compensated sales. Sometimes, as in the case of Maine, this does not hold up. Officials agree that compensated sales should include the entire fleet in addition to the traditional requirement that the system be used for a twelve-month period. The NEWMA believes it is time for the NCWM to recognize this method of sale as the most equitable way to sell products.

Interim Meeting Action: The Committee feels that further action depends on the outcome of the Specifications and Tolerances Committee item number 331-1, Recognition of Temperature Compensation. The Committee voted to maintain this item as Informational.

236 Uniform Regulation for National Type Evaluation

236-1 I Ensuring the NTEP Regulation is Consistent with NTEP Policies

Source: Northeastern Weights and Measures Association (NEWMA)

Background: Recent changes have been made to Publication 14 to institute classes of certificates: active, inactive, and withdrawn, but these changes have not been added to the Uniform Regulation for NTEP. The NEWMA requested that the Committee determine if changes should be made to harmonize the provisions of Publication 14 and the NTEP regulation. Prior to adopting NTEP maintenance fees, Certificates of Conformance (CC) did not expire. Under the maintenance fee system, manufacturers can only sell new devices that have an active CC or those manufactured before the CC expired.

The regulation does not prohibit a manufacturer from producing and selling devices with an inactive CC. The NEWMA believes that definitions are needed for the class of certificate, and language is needed to clarify the meaning "traceable to a CC." The NEWMA believes the current Section 3 is vague and that if a company is prohibited from selling a new device under an inactive or withdrawn certificate, States may be challenged. The Committee conducted a review of the regulation and identified several areas where it needs to be modified to reflect recent NTEP changes in Publication 14. The Committee carried this item over pending further action by the NTEP Board of Governors. The proposed changes will be presented in full after the Committee has had an opportunity to consider the impact of the change in NTEP administration.

Interim Meeting Action: The Committee voted to maintain this item as Informational. The Committee believes that additional guidance on NTEP policies is required prior to making a decision on this issue.

236-2 VC NCWM Certificates of Conformance

(This Item Was Adopted)

Source: Central Weights and Measures Association

Background: The proposed changes make the Uniform Regulation for National Type Evaluation consistent with the NCWM management changes that occurred at the Annual meeting of the National Conference on Weights and Measures on July 27, 1999. It will correctly identify who the issuing authority is for a Certificate by amending the definition of Certificate of Conformance.

Recommendation: Amend the NTEP Regulation as follows:

Section 2.1. Certificate of Conformance. A document issued by the ~~National Institute of Standards and Technology~~ National Conference on Weights and Measures based on testing by a Participating Laboratory, said document constituting evidence of conformance of a type with the requirements of this document and the NIST Handbooks 44, 105-1, 105-2, or 105-3.

Section 2.4. National Type Evaluation Program. A program of cooperation between the National Conference on Weights and Measures, National Institute of Standards and Technology, other Federal agencies, ~~National Conference on Weights and Measures~~, the States, and the private sector for determining, on a uniform basis, conformance of a type with the relevant provisions of National Institute of Standards and Technology Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices," and National Conference on Weights and Measures, Publication 14, "National Type Evaluation Program, Administrative Procedures, Technical Policy, Checklists, and Test Procedures."

Interim Meeting Action: The Committee voted to change the item designation to Voting. The Committee requests additional guidance from the Board of Directors on the timing of the change to coordinate with the NTEP transition.

237 Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Regulation

237-1 I Compliance Procedures for the Premium Diesel Fuel Regulation

Source: Petroleum Subcommittee

Background: In response to the 1998 NCWM adoption of premium diesel regulations, the SWMA requested the Committee to develop guidelines on regulatory procedures to assist States in ensuring compliance with the rule. The Premium Diesel Work Group developed an initial draft document based on the request. The draft document was presented to the Laws and Regulations Committee at the 1999 Interim Meeting. After reviewing the document, the Committee agreed with the recommendation and requested the Premium Diesel Work Group continue to develop the document into a final version. In an effort to solicit NCWM membership comments on the desired content of the guideline material, the document is presented in Appendix A as an informational item.

Interim Meeting Action: The Committee was advised that ASTM Standard D6468, Standard Test Method for High Temperature Stability of Distillate Fuels, has been adopted. The Committee voted to maintain this item as Informational.

237-2 I Petroleum Subcommittee Agenda Items

Source: Petroleum Subcommittee

Background: The Subcommittee has submitted several proposed projects for its 1999-2000 work plan. The Committee will develop an agenda for the Subcommittee based on the comments received on the following projects at the Annual Meeting.

Update the Engine Fuels, Petroleum Products, and Lubricants Laboratory Guideline – This guideline is contained in the Interpretations and Guidelines Section of NIST Handbook 130 and was last updated in 1994. Since then, the cost of equipment has changed and new test methods have been developed. The Subcommittee proposes to revise and update the guideline.

Federal Kerosene Dye Information – It was suggested that information on the new Internal Revenue Service kerosene dye policies be prepared and distributed to the States. The Subcommittee proposes to develop and distribute this information.

Automotive Lubricants – The Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Regulation, implies that the document covers lubricants. When the regulation was developed, the Subcommittee gave developing engine fuel requirements priority, with the understanding that in the future they would address lubricants. The uniform law gives broad authority to regulate lubricants; however, the regulation has no requirements. The Subcommittee has proposed developing requirements for lubricants for the Committee to consider.

Publication 21: The Western Weights and Measures Association recommends that the Petroleum Subcommittee also revise the sampling procedures and container requirements in NCWM Publication 21-*Petroleum Products Sampling Procedures and Safety Manual* to provide adequate precautions regarding the use of clear glass containers for product specification conformance testing. This recommendation is based on data presented to the NCWM by Chevron Products Company and Tennessee.

Interim Meeting Action: The Committee recognizes Randy Jennings and his subcommittee for all their work dealing with the assigned petroleum issues. The Committee publicly commends and thanks all those involved for a job well done. Randy, who serves as chairman of the Petroleum Subcommittee, was unable to attend the Interim Meeting because of funding problems hence the Committee did not receive the anticipated update. The Committee was unable to develop the Subcommittee agenda because additional information is still required. A new budget has been submitted to the NCWM Board of Directors, and the Committee expects that it will be approved allowing the Petroleum Subcommittee to complete its assigned tasks. The Committee voted to maintain the subcommittee's agenda as Informational.

238 Interpretations and Guidelines

238-1 VC Guideline on Product Flush Prior to Octane Sampling

(This Item Was Adopted)

Source: Southern Weights and Measures Association (SWMA)

Background: At the 1989 NCWM, Item 237-1: The NCWM adopted Octane Rating for Blend Dispensers. Passing this item was supposed to result in the following language being placed in NCWM Publication 3, *Policy, Interpretations, Guidelines*:"

"A minimum of 0.3 gallons of motor fuel shall be flushed from the dispenser before taking a sample for octane verification. The flush shall be returned to the storage tank containing the lowest octane."

This statement included a footnote related to multi-product dispensers that the NCWM deleted in 1993. All technical information supporting the 1-liter (0.3-gallon) flush can be found in the Report of the 74th NCWM (1989) and in the Report of the 78th NCWM (1993). NCWM Publication 3 has since been discontinued, and the guideline does not appear in the Interpretations and Guidelines Section of NIST Handbook 130. The SWMA recommends that this guideline be

added to NIST Handbook 130 because it provides for uniform sampling and agrees with NCWM Publication 21, *Petroleum Products Sampling and Safety Manual*.

Recommendation: Add the following guideline to the Interpretations and Guidelines Section of Handbook 130.

2.6.16. Minimum Fuel Flush for Octane Verification

A minimum of 1.2 liters (0.3 gallon) of motor fuel shall be flushed from a dispenser before taking a sample for octane verification. The flush shall be returned to the storage tank containing the lowest octane."

Interim Meeting Action: The Committee believes the intent of this requirement is to use a minimum of 0.3 gallons for an adequate flush. The 0.3 gallons converts to 1.136 liter and not 1 liter as the guideline states. The Committee believes that it would be very difficult to use a 1.136 liter flush. After consulting with several interested parties, the Committee voted to change 1 liter to 1.2 liter and move the item to voting status.

239 Price Verification

239-1 W Limit Time Allowed for Intentional Undercharges

Source: Northeastern Weights and Measures Association (NEWMA)

Background: The City of Boston, Massachusetts, reported a problem with intentional undercharges. Early drafts of Publication 19 had a twenty-four-hour time limit on intentional undercharges to permit retailers time to complete price changes. This was removed prior to adoption by the Conference at the request of the retail industry. The lack of a time limit leads to non-uniformity because some jurisdictions still allow 24 hours, while neighboring jurisdictions may choose different time limits. In principle, any pricing error is an error. Errors should be corrected in a timely manner. To promote uniformity and set reasonable limits, NEWMA proposes that the language of Section 2.14 (e) be amended to limit intentional undercharges to 48 hours. This should be more than sufficient time to complete price changes.

Interim Meeting Action: The Committee believes that numerous and very different pricing systems exist around the country. In principle, price changes and errors should be corrected in a timely manner. The Committee believes that establishing a specific time limit for changes and corrections would be detrimental to the NCWM. The Committee believes that each system should be evaluated individually and that the regulatory officials should use their training, experience, and personal knowledge of the system to determine if any violation has occurred. The Committee voted to withdraw this item.

250 NIST Handbook 133

250-1 W Maximum Allowable Variations (MAVs) for Count Declarations on Seed

Source: Central Weights and Measures Association

Background: This issue relates to the value of the Maximum Allowable Variation (MAV) permitted for count declarations on packages of agricultural seed such as corn and soybeans. According to the seed industry, farmers prefer to purchase seed by count because count is used in calculating acres per bag of seed and in calibrating seeding machines. The Committee worked with members of the seed industry, trade associations, and other interested parties to develop a proposal for NCWM to consider. The American Seed Trade Association (ASTA) established a work group comprised of industry and university representatives to study this issue and prepare recommendations for consideration at the 1998 Interim Meeting. The ASTA work focused on standardizing the procedures used to ensure the accuracy of electronic seed counters and developing uniform operational procedures for their use. The work group studied other issues such as the need to determine the impact of moisture loss on the accuracy of seed count and the need for a simplified test method to determine count. Prior to the Interim Meeting, the Committee received a letter from the Association of Official Seed Analysts (AOSA) about its study on seed count accuracy. The AOSA is an organization of regulatory agencies and/or seed laboratories from the U.S. and Canada whose mission is to promote uniform laws, regulations, and laboratory test methods. AOSA's letter described their proposed test method for counting soybeans which requires that the variation between test results be limited to 2 percent. The test method also includes procedures for sample selection and equipment calibration. The American Association of Seed Control Officials (AASCO), and the States of Maryland and Michigan submitted letters supporting the AOSA proposal. At the Interim Meeting, ASTA and Iowa State University presented the

results of their studies and explained the difficulties encountered in verifying seed counts. They also described how moisture loss impacts the accuracy of net weight and count declarations. The ASTA proposed that the NCWM adopt an MAV of 6 percent for seed count and requested that one or more packages be allowed to exceed the MAV.

Discussion: Due to the disparity between the recommended allowances determined by the two studies (Iowa State and AOSA), the Committee made this issue an information item. It recommended further review of the study methodologies and test results submitted by the interested parties. The Committee also encouraged the ASTA and AOSA to resolve the differences in their recommendations and resubmit a mutually agreeable proposal for future consideration. Regardless of the disparities, the Committee believes that the appropriate method of sale of packaged seed is by net weight and, if desirable, a seed count declaration should be included as supplemental information. If the seed industry selected this method of providing count information as a supplemental declaration, it would still be useful and easily accessible to farmers. This approach reduces the need for weights and measures officials to devote resources to verify the declaration which the seed control officials could control as part of their other regulatory duties. The Committee believes this is one way to resolve this issue because seed control officials have test equipment and can often verify count declarations as part of the seed certification process conducted in a laboratory.

At the 1998 NCWM Annual Meeting, a representative of the ASTA reported that its members had met with officials from the American Association of Seed Control Officials (AASCO) to develop a joint proposal regarding the appropriate MAV for count. At the 1999 Interim Meeting the Committee learned that both organizations agreed to support a proposal for a 4 percent MAV on declared count for soybean and corn. ASTA also urged the NCWM to adopt the AOSA sampling procedures for seed, and indicated desire to work with the Committee to develop a gray area for different seed similar to those the NCWM had adopted for dry pet food and flour.

1999 Regional Action: At the Central Weights and Measures Association (CWMA) Interim Meeting, a jurisdiction stated that for some seeds, the primary declaration should be count. Farmers use count to determine how many acres can be planted. Weight is not considered in the price of the seed. It was pointed out that if count is used as the primary declaration, test procedures in HB 133 should be reviewed. Under current test procedures, a package containing 80,000 seeds would require the inspector to manually count 8,000 seeds.

1999 Interim Meeting Action: The Committee carried this item over pending final action by the Association of Official Seed Analysts (AOSA) Seed Count Committee on a recommendation for test procedures and an MAV for corn and soybeans.

Interim Meeting Action: The Committee believes that variations on seed count make it impossible to determine and establish an appropriate MAV. The Committee believes that it will be some time before such standards can be determined and considered. The Committee voted to withdraw this item.

250-2 I Developing a 4th Edition of NIST Handbook 133

Source: Laws and Regulations Committee

Background: Currently, NIST Handbook 133, "Checking the Net Contents of Packaged Goods," is comprised of the Third Edition (1988) and Supplements 1 (1990), 2 (1991), 3 (1992), 4 (1994). Amendments adopted by the NCWM in 1998 and 1999 have not been published in supplemental form. There is little doubt that a new edition of the handbook must be published to eliminate the confusion caused by the supplements and to reduce the burden on inspectors and others who use the handbook. Developing a new edition is important so that the amendments to the handbooks adopted in 1998 and 1999 can be published and adopted by jurisdictions that incorporate Handbook 133 by reference. Following guidance received from the NIST Handbook 133 Working Group and the Committee, the Office of Weights and Measures (OWM) prepared two drafts of the 4th Edition of NIST Handbook 133. Comments on the second draft generally support the plain language, the question and answer format, and the elimination of some of the detailed explanations, examples, and other information included in the original Third Edition of the Handbook published in 1988.

While most of the comments have been supportive, several jurisdictions expressed concern over the new format and the elimination of some explanatory information. One comment was that the new format is appropriate for use as a field inspector's manual, but is not an acceptable replacement for the current handbook. This comment suggested that OWM update the Third Edition published in 1988, retaining all of the current information, pictures, and examples. A second comment proposed a different organization of the handbook, while a third suggested an extensive preface addressing State and local adoption and use of the handbook. The proposed preface would explain Federal preemption, and describe the procedures officials should follow before taking legal action on small lots of packages in retail stores. One of the most significant comments pointed out the need to use a more statistically valid method to compute the sample correction factor.

OWM has requested guidance from the NCWM on how to proceed with this project. OWM would like to know what the NCWM wants concerning format and content in a 4th Edition of the handbook if the content, plain language, and question and answer format in the second Draft does not meet the users' needs.

The Committee held a public hearing at the Interim Meeting to receive comments on the following proposals:

1. OWM staff continues to develop a fourth draft of the 4th Edition of the handbook using the question and answer/plain language format presented in the third draft of the 4th Edition. OWM will issue a fourth draft in 2000 incorporating the comments received on the third draft.
2. The second proposal is to return to the format in the 1988 version of the Third Edition of the Handbook retaining all of the detailed examples and interpretations. If this alternative is selected, the NIST Handbook 133 Working Group will take the lead on developing and preparing a draft revision. OWM will provide technical assistance to the Working Group.
3. The third proposal the Committee is considering is to reorganize and restructure the handbook to the format presented below. This reorganization would provide even more of the detailed examples and interpretations than were provided in the Third Edition of the Handbook.

NIST HANDBOOK 133 – Outline of Proposed Reorganization & Structure

The handbook is to be self-contained and independent of any other handbooks or documents. There should be no references to requirements contained in other documents because not all have been adopted by every jurisdiction.

A. Preamble

Introduction from the existing Handbook 133, Third Edition

Synopsis of the theory of statistical sampling

Overview of the sampling and testing procedures used in the Handbook

B. Regulation

1. *Application and Requirements of the Regulation, Definitions.*
2. *Compliance Determination. Core Procedure based on testing by weight, for Category A and B Sampling Plans, including adjustments or differences specific to Moisture Loss Allowance, and Established Gray Areas for wet tare jurisdictions.*
3. *Compliance Determination for Sampling Plans used for Packages Labeled by Count and Packages with Allowable Differences.*
4. *Tables*

C. Information, procedures, and instructions for the Inspector.

1. *Question and answer format for the detailed steps used in conducting tests according to this regulation.*
2. *Additional information concerning theories, inspections, and techniques of interest to sampling and testing programs.*

D. Test Procedures

1. *Weight procedures: General: net weight, drained weight, and substitution method, etc.*

Specific commodity: aerosol, frozen food, drained weight frozen food, glazed seafood & fish, canned coffee, borax, flour, meat and poultry from Federally-inspected plants, etc.

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2. *Liquid volume test procedures: General: direct measure, gravimetric, depth gage, headspace, displacement, etc.
Specific commodity: milk, paint, very viscous materials, ice cream, etc.*
3. *Dry Volume: General and specific commodity tests.*
4. *Count.*

E. *Appendix: Random Number Tables, Glossary, Acknowledgements and References, Model Inspection Report Forms.*

If the third proposal is accepted, the NIST Handbook 133 Working Group will take the lead in developing a draft revision. OWM will provide technical assistance to the Working Group.

Interim Meeting: At the Interim meeting, the Committee solicited comments on these proposals. The Committee met with the Board of Directors to discuss these proposals, request funding for the NIST Handbook 133 Working Group, and develop timetables so that this project can be concluded in a timely manner.

Interim Meeting Action: The Committee met with the Board of Directors and formulated the following plan: OWM will continue to develop the 4th edition using the question and answer format. Any technical changes from the current requirements will be subject to review and approval of the L&R Committee and will be forwarded to the conference as informational items. No time line has been established for completing the handbook; however, OWM will maintain this item as a high priority. The Committee has requested that a “roundtable” discussion concerning HB 133 be scheduled at the 2000 Annual Meeting of the National Conference. The Committee voted to continue this item as Informational.

Technical Changes and Corrections to NIST Handbook 133

The Committee received hundreds of comments and suggestions on the second and third drafts of the 4th Edition of NIST Handbook 133. Several comments addressed statistical issues, lot sizes, and the need for officials to follow due process procedures when they take action on packages that fail to meet the average or individual package requirements in the handbook. The Committee solicits comments on the suggested changes to the handbook that are detailed in items 1,2, and 3 below.

1. The Sample Correction Factors in Table 2-1. Sampling Plans for Category A were originally computed using $2/\text{square-root of } n$. Numerous comments on the second draft pointed out that the statistically correct approach to computing the SCF should use the t-statistic that sets the correction factor to match the sample size. NIST agrees that this change should be made to make the handbook correction factors statistically correct, bringing it into closer harmony with the *OIML 87 “Net Contents in Packages.”* If this change is adopted, the following correction factors will replace those currently in Table 2-1.

Sample Size	Sample Correction Factor
1	Apply MAV
2	8.984
3	2.484
4	1.591
5	1.241
6	1.050
7	0.925
8	0.836
9	0.769
10	0.715
11	0.672
12	0.635
24	0.422
48	0.291

2. Comments received on the second draft pointed out some concern that the 48-item sample for lots with more than 3200 packages resulted in actions being taken against lot sizes up to 200,000 packages. Field inspectors have difficulty properly collecting a random sample from very large lots, so most inspectors try to divide very large lots into more

manageable sizes. Even though the inspectors determine the lot size, the current version of the handbook provides no guidance on dividing lots. *OIML 87 "Net Contents in Packages"* recommends that lots of more than 10,000 packages be divided into smaller lots. NIST recommends that similar guidance be added to the 4th Edition of the handbook in the form of a note to the sampling plans so the handbook provides guidance that is consistent with OIML 87.

3. Industry provided comments on the need for officials to follow due process procedures when taking action on lots of packages. According to the comments, one of the most frequent problems is that many jurisdictions do not follow the model guidelines on due process procedures adopted by the NCWM in 1997. OWM has suggested that Section 2.6.10. Model Guidelines for the Administrative Review Process in the Interpretations and Guidelines Section of NIST Handbook 130 be incorporated as appendices in the 4th Edition of the handbook along with Section 2.6.12. Point-of-Pack Inspection Guidelines. Including these in the handbook will stress their importance, and they will be available to every official who conducts net content verifications.

4. Other notes: several comments correctly pointed out that the ratios and number of packages to be opened in the tare determination tables in the 4th edition draft are not consistent with the 3rd Edition. OWM is in the process of re-computing all of the tare determination tables to identify and correct any errors that may have occurred in calculating or rounding the values. The third Draft of the 4th Edition of the handbook will include updated tables set to ensure that the contribution of tare to overall variation is no more than 5 percent, the limit NCWM adopted in 1994.

260 Other Items

260-1 W Electronic Price Labels

Source: Southern Weights and Measures Association

Background: In 1998 the Committee received the following correspondence from the Hobart Corporation.

"Hobart now offers an 'Electronic Shelf Labeling System.' As this new product enters the market, we are encountering variations in requirements from state to state. We are requesting that a Uniform Regulation for Electronic Price Labels be developed as a standard for electronic price labeling at the retail shelf. We would like to request that you raise this issue at the Southern Regional meeting of the NCWM in October so that the proposal may begin receiving due process toward completion of a regulation.

Electronic Shelf Tags provide a near certain way to assure accurate pricing and 1:1 correlation between the displayed price and that stored in a retail store's central computer files. As a manufacturer, we are facing the prospect of having to design and tool shelf tags unique to each jurisdiction. This will be an expensive process for us and will reflect ultimately on the price and, consequently, acceptance of this technology. We feel confident that a Model Regulation will facilitate the acceptance of electronic price labeling and will lead to a more rapid implementation to the benefit of the consumer.

Currently, states are attempting to apply their paper tag requirements. We are seeing variations in requirements including but not limited to: use of background colors, use of 'bold' type for 'Unit Price,' special locations for unit and total price information and differing minimum character size requirements. All in addition to the stipulations of the Unit Pricing Regulation in Handbook 130."

Regional Meeting Action: The Hobart Corporation and Southern and Western Weights and Measures Associations (SWMA) recommend that this item be withdrawn. The Northeastern Weights and Measures Association (NEWMA) believes there is merit in continuing to look for some national uniformity in this area. This is an emerging technology that will be less expensive and better in the long term if the States can adopt uniform standards. Certainly it would be less expensive for industry to implement and would benefit consumers. NEWMA supports the idea of a work group to explore standardization.

Interim Meeting Action: The Committee believes that placing restrictions on such new technology would be detrimental to further developing of such technology and voted to withdraw this item.

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S. Morrison, San Luis Obispo County, California, Chairman

R. Williams, Tennessee
D. Onwiler, Nebraska
D. Johannes, California
P. D'Errico, New Jersey

Associate Membership Committee Representative: C. Guay, Procter & Gamble Company

NIST Handbook 133 Working Group: B. Bloch, California, Chairman

Petroleum Subcommittee: Randy Jennings, Tennessee, Chairman

Canadian Technical Advisors: J. Watters and B. Lemon

NIST Technical Advisor: T. Coleman

NIST Technical Advisor on the Uniform Regulation for National Type Evaluation: T. Butcher

Committee on Laws and Regulations

Appendix A

Guidelines for Administrative Decisions Regarding Premium Diesel

Introduction

Premium diesel was first defined in 1998 as a result of voting action at the NCWM annual meeting. Prior to that, there was no uniform definition approved through a standards development organization. Because the scope of the NCWM definition goes beyond traditional fuel testing parameters, certain administrative aspects for a regulatory agency justify discussion.

The NCWM definition encompasses five parameters from which the marketer may choose when formulating a premium package: Cetane Number, Low Temperature Operability, Energy Content, Fuel Injector Cleanliness, and Thermal Stability. Requirements for claiming cetane number, low temperature operability, and energy content are more traditional elements of diesel fuel testing and do not warrant a detailed discussion in this document. Because fuel cleanliness and thermal stability have traditionally been less familiar parameters for diesel fuel, this document will focus primarily on those properties. Additionally, this document will offer guidance on sample volumes necessary to conduct laboratory testing.

Fuel Cleanliness Guideline

The fuel cleanliness criterion of the NCWM Premium Diesel regulation is based on performance in the Cummins L10 Injector Depositing Test. This criterion can be met by either the use of a detergent additive or by demonstrating that the fuel as sold can pass the Cummins L10 test due to inherent cleanliness. Compliance testing initiated by the weights and measures official should be conducted with the Cummins L10 Injector Depositing Test using the latest test method as approved by the ASTM Cummins L10 Injector Depositing Test Surveillance Panel. As of September 1, 1998, this is draft test procedure number 4a.

From an enforcement point of view, the marketer must be prepared to provide sufficient data to substantiate the detergency claim to a state weights and measures director.

When using a detergent additive that meets the criterion, the marketer must have passing results from a Cummins L10 Injector Depositing Test. The test must be conducted using Cat 1K reference fuel. The test data must also include the treatment level (amount) of additive that was used in the performance test to achieve the passing result.

To verify the proper addition of additive into diesel fuel, the marketer is expected to maintain records that allow reconciliation between additive consumption at the required additive treatment rate shown in the test data and the volume of premium diesel fuel sold. It is recommended that this Volume Additive Reconciliation be compiled on a quarterly basis and that records be maintained for a minimum of one year. A sample additive usage form is provided as a guide at the conclusion of this document.

The marketer must also maintain a chemical and physical description of the detergent additive that is being used. This description can be compared to the chemical and physical properties of an additive sample drawn from the marketer's facility. This allows the inspector to assure that the additive being used is substantially similar to the additive used in developing the required supporting documentation. The chemical and physical description of the detergent additives should include as a minimum:

- Specific Gravity
- Viscosity @ 20 °C and 100 °C
- Elemental Analysis *or* Fourier Transformation Infrared Analysis

It is important to note that many diesel fuel additives that can be used under the NCWM regulation may contain a number of different components, including active ingredients and solvents. All documentation and additive descriptions should reflect the additive package that the inspector will encounter in the field. Additionally, it is common practice in the industry to switch additives between summer and winter to meet seasonal performance and additive handling needs. The director of the responsible jurisdiction should consider this when determining the timing of additive package testing for performance criteria or compositional analysis.

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To check the actual performance of the detergent additive in use, the inspector may collect a sample of the actual additive used at the marketer's facility to produce premium diesel fuel. This sample can be tested using the latest test procedure in the Cat 1-K fuel as recommended above. This proof testing is at the discretion of the inspecting agency.

If the marketer chooses to demonstrate the inherent cleanliness of the fuel being sold (fuels that can meet the requirement without detergent additive or by using a lower than recommended concentration of additive), the fuel must be tested annually at the marketer's expense. The regulatory agency must agree with the test date. If the annual test fails to comply with the rule, the marketer pays for any additional testing. If the test fails to comply with the rule, the director has the authority to initiate enforcement as authorized by the governing law of that jurisdiction. To continue to market the fuel as premium diesel, the marketer may be requested to provide a description of production adjustments along with a newly acquired L-10 pass certificate to the Director.

All documentation associated with the detergency criterion should be made available to the director within a reasonable period of time upon request. It is recommended that the data be provided within 30 days of the request. Data sharing among the various regulatory agencies may be an especially useful tool for assurance of fuel cleanliness compliance. If a regulatory agency has reason to suspect a detergent package being used is less than adequate to meet premium diesel standards, the regulator may benefit from obtaining any available data on testing conducted on that package by other regulatory agencies. Additionally, when fuels that rely on the inherent cleanliness of the fuel to qualify as premium diesel are marketed across jurisdiction lines, it would be reasonable to request data from the director of the jurisdiction in which the point of product distribution is located prior to requiring the marketer to provide new test data.

Thermal Stability Guidelines

The test method adopted by the NCWM, Octel America F21-61, is a well-established and reliable indicator of the ability of the fuel to withstand high temperature exposure for a prolonged period of time (180 minutes, 150 °C). This test is currently being developed into an ASTM test method. The procedure has been drafted into ASTM format and a round-robin test program to determine the test's repeatability and reproducibility limits has been conducted. While this method will not be official until accepted by ASTM, it is expected that the reproducibility of the test method will be approximately 10% at the 80% reflectance level based on the use of the prescribed reflectance meter.

Sample Volume Guidelines

Detergency

Test Method: Cummins L10 Injector Depositing Test, draft test procedure number 4a

Volume of Fuel Required/Test: 320 - 340 gallons

Volume of Additive for testing with CAT-1K reference fuel as specified by the additive producer

Energy Content (Btu)

Test Method: ASTM D240 Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter

Volume of Fuel Required/Test: 50 ml (recommend 100 ml)

Low Temperature Operability

Cloud Point

Test Method: ASTM D2500 Cloud Point of Petroleum Products

Sample Collection: Obtain samples in accordance with Practices ASTM D4057 or ASTM D4177

Volume of Fuel Required/Test: 50 ml (recommend 100 ml)

LTFT

ASTM D4539 Filterability of Diesel Fuel by Low-Temperature Flow Test

Volume of Fuel Required/Test: 200 ml (recommend 500 ml)

Thermal Stability

Test Method: Octel F21-61

Volume of Fuel Required/Test: 50 ml (recommend 100 ml)

Cetane

Test Method: ASTM D613 Cetane Number of Diesel Fuel Oils

Volume of Fuel Required/Test: 1000 ml (recommend 2000 ml)

Report of the Committee on Specifications and Tolerances

Monty H. Hopper, Chairman
 Kern County Weights and Measures
 Kern County, California

Reference
 Key Number

300 Introduction

This is the final report of the Committee on Specifications and Tolerances (S&T) for the 85th Annual Meeting of the National Conference on Weights and Measures (NCWM). The report is based on the 85th Interim Report offered in NCWM Publication 16, "Committee Reports," 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 items 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 consent calendar by the suffix "VC" after the item number. Items marked with an "I" after the reference key number are information items. Items marked with a "D" after the key number are developing issues. The developing designation indicates an item has merit; however, the item is returned to the submitter to develop further before any action is taken at the national level. The Committee withdrew items marked with a "W." Items marked with a "W" generally will 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 lists the Appendices to the report, and Table C provides a summary of the results of the voting on the Committee's items and the report in entirety.

The attached report contains many recommendations to revise or amend National Institute of Standards and Technology (NIST) Handbook 44, 2000 Edition, "Specifications, Tolerances, and other Technical Requirements for Weighing and Measuring Devices." Proposed revisions to the handbook are shown in **bold face print** by ~~crossing out~~ text to be deleted, and underlining information to be added. Requirements that are proposed to be nonretroactive are printed in italics. Entirely new paragraphs or sections proposed for addition to the handbook are designated as such and shown in **bold face print**.

Note: The policy of the National Institute of Standards and Technology 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.

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**Table C
Voting Results**

Reference Key Number	House of State Representatives		House of Delegates		Results
	Yes	No	Yes	No	
300 (Consent Calendar)					Passed
320-1	36	5	62	2	Passed
320-5	37	5	41	19	Passed
330-1	37	1	60	0	Passed
300 (Report in its Entirety) Voice Vote	All Ayes	No Nays	All Ayes	No Nays	Passed

Details of all Items Follow in Numerical Order

310 General Code

310-1 I G-S.1. Identification and Appendix D, Definitions for Manufactured and Remanufactured Devices

Source: Carryover Item 310-1 (This item originated from the Central Weights and Measures Association and first appeared on the Committee's 1997 agenda.)

Discussion: In December 1999, Remanufactured Device Task Force Chairman James Truex (Ohio) provided the Committee with a draft report of the Task Force's work to date. The Task Force met twice during the January 2000 NCWM Interim Meeting. During the Committee's agenda review session, Mr. Truex provided updates on the Task Force's work and responded to questions.

Mr. Truex acknowledged the Task Force's mission involves work on the regulatory and NTEP issues relating to remanufactured devices. Many of these issues surfaced during the Committee's earlier discussions; however, unlike the Committee, the Task Force has only remanufactured devices as its focus. Mr. Truex indicated the Task Force plans to address the Committee and the Board of Directors with its findings. The Committee asked that the Task Force's final report provide more detail in the areas of (1) defining what constitutes a metrological change to a device, (2) the longevity of remanufacturing businesses, and (3) which participants in the device distribution cycle must comply with the marking requirements.

The Central, Northeastern, Southern, and Western Weights and Measures Associations recommended this issue remain informational until the Task Force completes its work. The WWMA also encouraged its association members to forward their comments to the WWMA representative on the Task Force, Gary West (New Mexico).

During the 2000 NCWM Annual Meeting, Task Force Chairman Jim Truex (OH) indicated that work will be completed by August 2000. The Committee supported the Task Force in completing its work by the August 2000 target date. The Task Force plans to have alternate new definitions for the terms "remanufactured device," "remanufactured element," "repaired device," "repaired element," as well as a replacement definition for the current Handbook 44 definition for "manufactured device," and a proposal for marking requirements. These proposals will be ready for review at the 2000 Fall regional associations meetings and at the 2001 NCWM Interim Meeting.

Background: Since 1997, the Committee considered several proposals to modify G-S.1. to require remanufacturers to label remanufactured devices. At the 1999 Interim Meeting, the S&T Committee reviewed the associate industry's latest proposal to require remanufacturers to label devices and to define "remanufacturer," "remanufactured devices," and "repaired devices." The Committee expressed appreciation for the associate industry's work over the past 3 years to develop definitive language, which all parties accept.

The Committee agreed with industry that the proposed language was the first small step, but it believed this approach did not provide adequate criteria to enable uniform enforcement by weights and measures officials. For the second time, the Committee considered withdrawing Item 310-1 because it was not fully developed and lacked the most critical criteria for implementation. The Committee acknowledged that determining responsibility for a device is essential to ensuring proper installation, maintenance, and operation of equipment. After lengthy deliberations, division on several votes, and hearing comments to pursue this issue, the Committee gave the proposal informational status. The Committee made this decision with the understanding that the Board of Directors would convene a Task Force to resolve the unanswered issues regarding the enforcement of this proposal.

The Committee recommended the Task Force be of suitable size and represent all parties affected by the proposed requirements. The Committee struggled at length with the issue of determining who is responsible for a device and cautioned the Task Force to take adequate time to objectively analyze and address a list of pressing issues. The Committee listed concerns about (1) the justification of new criteria; (2) who decides at what point in a device's life cycle the proposal can be enforced; (3) how to uniformly establish policies which do not restrict trade; and (4) the impact of the proposal on NTEP. The Committee encouraged the Task Force to consult with the NCWM's or other available legal

counsel to ensure that the guidelines jurisdictions use to enforce remanufacturer requirements are uniform, fair, and follow due process.

The NCWM Board of Directors agreed to the Committee's recommendation and appointed a Task Force to examine the issues about how to enforce the proposal and clarify the impact on the NTEP Program. The Task Force held its first meeting on July 29, 1999 at the NCWM Annual Meeting in Burlington, Vermont. After discussions with Task Force Chairman Jim Truex, NCWM Chairman Diggs agreed on a target date of August 2000 for the Task Force to prepare its findings for dissemination at the 2001 NCWM Interim Meeting.

For additional background information on this item, refer to the 1997, 1998, and 1999 final reports of the S&T Committee.

310-2 VC G-S.1. Identification; Model Number

(This item was adopted as part of the consent calendar.)

Source: Carryover Item 310-2B. (This item originated from the Specifications and Tolerances Committee and first appeared on the Committee's agenda in 1999.)

Recommendation: Modify paragraph G-S.1. Identification as follows:

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 designation that positively identifies the pattern or design of the device;
- (c) the model designation shall be prefaced by the term "Model," "Type," or "Pattern." These terms may be followed by the term "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 January 1, 2003]

[Note: Prefix lettering may be initial capitals, all capitals or all lower case.]

- (d) except for equipment with no moving or electronic component parts, a nonrepetitive serial number;
[Nonretroactive as of January 1, 1968]
- (d g) the serial number shall be prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required serial number; and
[Nonretroactive as of January 1, 1986]
- (e f) the serial number shall be prefaced by the words "Serial Number" or an abbreviation of that term. 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]

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.

Modify Table S.6.3.a. and Table S.6.3.b. Note 1 of the Scales code as follows:

Table S.6.3.a.

Marking Requirements

To Be Marked With	Weighing Equipment	Weighing, load-receiving, and indicating element in same housing	Indicating element not permanently attached to weighing and load-receiving element	Weighing and load-receiving element not permanently attached to indicating element	Load cell with CC (11)	Other equipment or device (10)
Manufacturer's ID (1)	x	x	x	x	x	x
Model designation <u>and prefix</u> (1)	x	x	x	x	x	x
.						.
.						.
Section Capacity(14) (20)			x	x		

For applicable notes, see Table S.6.3.b.

Table S.6.3.b.

**1. Manufacturer's identification and model designation and model designation prefix. *
*[Nonretroactive as of January 1 2003.] (See G-S.1) *Prefix lettering may be initial capitals, all capitals, or all lower case.***

Discussion: During discussions at the 1999 Interim Meeting about agenda item 310-2A, G-S.1. Identification; Serial Number, the Committee recognized that clearly identifying the model number was a separate but equally important issue. The Committee heard comments about the confusion over information listed on the device identification plate or tag. Field officials find identification plates marked with multiple numbers or a generic name and insufficient information to discern the manufacturer's name and the serial and model numbers. The Committee agreed that it is appropriate to modify paragraph G-S.1. to address the identification of model numbers.

Based on industry comments at the 1999 NCWM Annual Meeting, the Committee recognized that other appropriate terms are used internationally to denote "model," such as "type," "pattern," or "style." These alternate terms are also used in conjunction with the term "number." The Committee recognized the difficulty weights and measures field officials and NTEP laboratories encounter when searching for a uniform means to determine which numbers or terms correspond to a specific device design. These numbers must also agree with information listed on the Certificate of Conformance. The Committee felt that NTETC Sectors and NTEP Participating Laboratories require additional time to review the various proposed terms and, therefore, made the item informational.

During the July 1999 open hearing, the Committee heard industry opposition to the proposal because of the difficulty and cost to change castings and corporate model standards. The Scale Manufacturers Association noted that many manufacturers use the term "type."

The Western Weights and Measures Association (WWMA) recommended modifying paragraph G-S.1.(b) to include the terms "pattern," "model," "type," "design," or "style" to identify the device pattern or design. The WWMA agreed that the number of identifying terms must be kept to a manageable level, otherwise it becomes unclear which set of numbers or characters represent the model. The WWMA acknowledges that using an alternate proposal to require marking the NTEP Certificate of Conformance Number on a device may be a second option that would allow field officials to cross reference a device type and confirm that it is an approved design. One WWMA member noted that the term "class" is not

an acceptable term because devices are already marked with an “Accuracy Class.” The WWMA agreed that the proposal should be a nonretroactive requirement; however, an enforcement date of January 1, 2003, would ensure sufficient time for manufacturers to comply.

The Measuring Sector noted that it considers the terms “pattern” or “model” appropriate as a nonretroactive marking requirement. A Sector member noted that the term “series” is inappropriate because it can represent a multitude of generations and versions of devices manufactured by a company.

The Central, Northeastern, and Southern Weights and Measures Associations supported the WWMA’s proposal to modify paragraph G-S.1.(b).

The Committee considered all the proposals and agreed to support the WWMA’s alternate proposal and recommendation for a nonretroactive January 1, 2003 enforcement date as shown above. The Committee recognized that a January 1, 2003 enforcement date was needed to allow manufacturers time to their modify equipment. Several industry members noted that the word “number” should be permitted as an optional term to identify the model designation. While the Committee recognizes that the model designation may not always be a number, many manufacturers use the term “number” to preface a model designation. Therefore, the Committee agreed the term “number” is acceptable and modified the proposal to provide uniform guidelines about how the term shall be abbreviated. The Committee was reminded that the focus of this issue was to provide the field official with easy access to device information. A multitude of terms makes enforcement more difficult; therefore, the Committee agreed to only three terms.

The Scale Manufacturers Association and Gasoline Pump Manufacturers Association supported the proposed recommendation above.

During the 2000 NCWM Annual Meeting, the Committee noted that the terms are not case sensitive. Therefore, the Committee added a note to G-S.1. and text to Table S.6.3.b. to indicate which letter case is acceptable for the prefix. The Committee also decided that changes were needed to Table S.6.3.a. and Tables S.6.3.b. Note 1 to include a requirement for a prefix that identifies the model number.

310-3 I G-S.1. Identification; Certificate of Conformance Number

Source: Southern Weights and Measures Association (SWMA)

Recommendation: Modify paragraph G-S.1. Identification as follows:

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 designation that positively identifies the pattern or design of the device;**
- (c) *except for equipment with no moving or electronic component parts, a nonrepetitive serial number;*
[Nonretroactive as of January 1, 1968]
- (d) *the serial number shall be prefaced by words , an abbreviation , or a symbol, that clearly identifies the number as the required serial number; ~~and~~*
[Nonretroactive as of January 1, 1986]
- (e) *the serial number shall be prefaced by the words “Serial Number” or an abbreviation of that term. 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.); and*
[Nonretroactive as of January 1, 2001]
- (f) *For devices that have an NTEP Certificate of Conformance (CC) Number or a corresponding CC addendum number, the NTEP Certificate of Conformance Number, prefaced by the terms “NTEP CC,” “CC,” or “Approval.” These terms may be*

followed by the term "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.

Discussion: The SWMA noted that this proposal appeared on an earlier NCWM agenda. Since that time, several significant changes and problems occurred: (1) confusion has arisen about similar devices used in legal and not legal for trade applications; (2) hard copies of Certificates of Conformance (CC) are no longer published in NCWM Publication 5 and the NISTIR 6304 lists only indices of NTEP device evaluations; and (3) problems sometimes occur when accessing Certificates of Conformance on the Internet. Initially, problems with Internet access developed because of sitewide malfunctions with the server; however, that was corrected. SWMA also noted that other countries require a pattern approval mark, and Handbook 44 shows a precedence which requires mass flow meters to be marked with the pattern approval number.

One SWMA weights and measures official noted that an alternate proposal (Item 310-2) on the agenda requires terminology to positively identify the model number. Identification of the model number will provide information that makes it easier to trace a device design to NTEP.

The Western Weights and Measures Association (WWMA) heard the SWMA's justification for including the CC number as a marking requirement. The WWMA agreed the proposed marking information may be in a separate location from current G-S.1. information on the device as long as it is clear and visible. The WWMA acknowledged that there may be some uncertainty about marking remanufactured devices with CC information because of questions about what CC information should stay with the device. The WWMA noted the proposal will align the U.S. with OIML and Canada and is consistent with the Mass Flow Meter Code. Therefore, WWMA recommends this item move forward for a vote.

The Northeastern Weights and Measures Association (NEWMA) recommended withdrawing this item if Item 310-2 requiring a prefix identifying the model number is adopted. NEWMA agreed that field officials would have sufficient information from a clearly identifiable model number and is not in favor of burdening manufacturers with the added costs of labeling equipment with redundant information.

The Committee noted the importance of carefully reviewing a device's CC to determine what specific parameters the Certificate covers. Field officials, device operators, and servicepersons should not rely on the CC marking as the sole indication that a particular device design is approved. Any jurisdiction can request Certificates of Conformance from NTEP.

The Committee agreed that the proposal should include the term "Approval" because similar wording is used in the Mass Flow Meters Code and in Canadian requirements. Several industry members noted it should be optional to use the term "number" in conjunction with the terms "NTEP CC," "CC," or "Approval" to identify the CC number. The Committee noted that this proposal and Agenda Item 310-2 meet the spirit of providing the field inspector with necessary information about the device. The Committee agreed that 2003 is an appropriate enforcement date that allows manufacturers time to comply, and the proposed effective date coincides with the proposed enforcement date for identifying the device's model number. For CCs with addendum(s) the device may be marked with either the base CC number or the addendum number that covers the particular device for example, "CC Number 03-123" or "CC Number 03-123A1."

Several manufacturers opposed additional marking requirements. One manufacturer recommended editing Certificates so that the text clearly list identification information for tracing equipment to a particular CC. One manufacturer expressed concern about which industry representative is permitted to place a CC Number on a device and what occurs when a CC Number becomes inactive.

During the 2000 NCWM Annual Meeting, the Committee heard numerous comments that the proposal should be aligned with OIML marking requirements. The Scale Manufacturers Association (SMA) indicated that the current proposal wording creates additional labeling requirements and is not in harmony with OIML "pattern approval mark" requirements. SMA noted the term "approval" is often associated with the official having statutory authority. SMA agreed to develop alternate language which is consistent with OIML requirements by the 2001 NCWM Interim Meeting if the Committee would make this item an informational item. The Committee intends to maintain a nonretroactive enforcement date of January 1, 2003, when it revisits this issue. The Committee agreed to make this an informational item to allow additional time for study and development of the issue.

310-4 W G-S.5.2.3. Size and Character

(This item was changed from an information item to a withdrawn item at the Annual Meeting)

Source: National Type Evaluation Technical Committee Weighing Sector

Discussion: The Committee considered a proposal to add the following new paragraphs G-S.5.2.3.(b) and (c) Size and Character to Handbook 44:

G-S.5.2.3. Size and Character

- (a) In any series of graduations, indications, or recorded representations, corresponding graduations and units shall be uniform in size and character. Graduations, indications, or recorded representations that are subordinate to or of a lesser value than others with which they are associated shall be appropriately portrayed or designated. [Made retroactive as of January 1, 1975.]
- (b) Except for electronic cash registers (ECRs) on direct sale digital devices that display primary indications, the numerical figures of the primary indications on the customer side must be at least 9.5mm in height.
[Nonretroactive as of January 1, 200X.]
- (c) For electronic cash registers (ECRs) the display of the measurement units must be at least 9.5mm in height.
[Nonretroactive as of January 1, 200X.]

The Maryland NTEP Participating Laboratory evaluated a software based Electronic Cash Register (ECR) system which was designed to display the indications on a cathode ray tube (CRT) screen. The display area was 12 mm high and located in one corner of the screen; however, the weight indications were only 4 mm high. The lab was concerned that the height of the characters displayed on the screen was insufficient for adequate visibility. Publication 14, NTEP Checklist for ECRs, has no specific character size criteria for indications. During the 1999 NTEP Laboratory Meeting, lab representatives recognized the need for uniform guidelines and agreed to prepare a proposal for a minimum character height requirement of 10 mm \pm 0.5 mm for, the Weighing Sector's review, similar to corresponding requirements in other code sections.

During the Sector's review of the proposal, several members stated that a minimum height requirement should apply only to devices used in direct sales and only to indications on the customer's side. Others indicated any proposal should be compatible with OIML requirements. The group generally agreed that, except for the measurement units, all ECR indications should be exempt from size requirements. The Sector agreed that the exemption was acceptable because, unlike other weighing systems, the customer receives a receipt from weighing systems interfaced with ECRs. The Sector also agreed that a General Code requirement would be more appropriate than the laboratory's proposal to modify a specific code requirement. The Sector developed the above proposal to forward to the NCWM S&T Committee to add new requirements to Handbook 44, General Code, Paragraph G-S.5.2.3, to address the size of ECR indications.

The Committee held a lengthy discussion at the 2000 NCWM Interim Meeting about the clarity of and necessity for the proposal. One Committee member questioned the need for size requirements in particular applications such as jewelry scales since there are no corresponding size requirements in all Handbook 44 code sections to address specific device types.

The Committee was advised that a requirement of 9.5 mm would agree with pending OIML R 76 requirements. The Committee recognized that exceptions to the requirement are given to electronic cash registers (ECR) because the customer receives a receipt in these applications.

Scale manufacturers noted that the operator may elect to supply the weighing system with a CRT having scalable characters that do not comply with the proposed size requirements. Therefore, a corresponding user requirement may be necessary in addition to the proposed specification requirement to ensure that scale operators do not make incorrect modifications to weighing systems or use non-compliant equipment.

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The Gasoline Pump Manufacturers Association strongly opposed the proposal because its members currently have equipment with quantity displays 4 mm in height.

The proposal places specific requirements on indications located on the customer side of the display. However, one NTEP laboratory representative noted that during type evaluation it is not always possible to determine which side of the device will be used as the customer display. One manufacturer noted that the proposal also needs to address width requirements for the transaction information. Several participants indicated that the proposal is unclear about the size requirements for the quantity of measurement units and should not address an isolated problem.

The Committee recognized that without uniform guidelines, the NTEP Laboratories and field officials would have difficulty consistently determining the suitability of indications. Therefore, the Committee agreed that the proposal had merit. The Committee considered the comments about clarifying the text and agreed that the proposal needs work to clarify which characters and devices must comply with the size requirements. During the Interim Meeting, the Committee gave the item information status to allow the Weighing Sector time to revise the text so that it clearly addresses the specific problem encountered by the laboratories.

During the 2000 NCWM Annual Meeting, the Committee heard numerous comments about the ambiguity of the wording and conflict with the size of existing retail motor-fuel dispenser display information. The Weighing Sector Technical Advisor indicated a specification requirement might be a possible alternate proposal. Industry members agreed that one size requirement may not be appropriate for all indicators because the customer position varies and depends on the application. For example, viewing taximeter indications usually occurs from the rear seat of a taxi. One laboratory noted that the size requirements in the Grain Moisture Meters and Taximeters Codes were developed because of the importance of indication visibility from the customer's position. Consequently, the Committee is withdrawing the proposal because of opposition and asks the Weighing Sector to conduct additional work to clarify the intent of the requirement and ensure it applies to the appropriate applications.

310-5 W G-S.5.6.2. Multiple Recorded Representation

(This item was changed from an information item to a withdrawn item at the Annual Meeting)

Source: Carryover Item 310-3. (This item originated from the Specifications and Tolerances Committee and first appeared on the Committee's agenda in 1999.)

Discussion: During the 2000 Interim Meeting, the Committee modified its original 1999 proposal to read as follows:

G-S.5.6.2. Duplicate Receipts. – If an electronic recording element has the capability to reproduce a receipt, then the information printed must be identical to the original with the possible exception of time and date. Except for devices printing labels, the duplicate receipt must include the words "duplicate" or "copy."
[Nonretroactive as of January 1, 200X.]

During the July 1999 review of Item 354-3, S.1.9.X. Multiple Recorded Representations for taximeters, the Committee agreed that many devices are equipped with recording elements that are capable of printing duplicate receipts and tickets. To ensure that using duplicate receipts does not facilitate fraud, the Committee believed that a printed receipt should indicate when the receipt is a "duplicate." Members of the weights and measures community also cited examples of fraudulent use of duplicate receipts. These include issuing receipts with the largest delivered amount or weight to multiple customers or using receipts to falsify reimbursement claims. The Committee therefore developed a proposal to add a paragraph to the General Code to address all applications where devices can print duplicate receipts.

Since General Code requirements affect all commercial devices equipped with a recording element, the Committee wanted to ensure that ample time was provided for study and comment. Consequently, the Committee made the proposal a developmental item. The Committee encouraged the regional weights and measures associations to study the proposal and provide input about problems that officials encounter when systems have the capability to issue duplicate receipts.

During the Committee's July 1999 discussions, one retail motor-fuel dispenser manufacturer noted that Publication 14 addresses the issue of duplicate receipts. Moreover, if fraudulent use of duplicate receipts causes concern in the taximeter industry, then the Committee should address only the Taximeter Code Section of Handbook 44. In response to this comment, the Committee considered removing the proposal from the General Code and addressing the issue in specific code sections. The Committee discussed whether or not the existing paragraph G-S.2. Facilitation of Fraud supports the current Publication 14 criteria for duplicate receipts. While the Committee agreed that G-S.2. does support the

interpretation in Publication 14, the Committee felt that adding specific language to Handbook 44 would strengthen support for the Committee's latest interpretation of identifying duplicate receipts.

The Committee was concerned about duplicate receipts generated by liquid-measuring device receipt printers such as those used in the latest vehicle tank metering system technology. Because recorded representations from electronically printed receipts give the appearance of being authentic or the only transaction receipt, the Committee felt that duplicate receipts printed by these devices should be identified as such. The capability of mechanical and nonintelligent printers to provide duplicate receipt information also raises questions about how prevalent is the practice of issuing duplicate receipts and the capability of those systems to comply with the proposal.

The Northeastern Weights and Measures Association (NEWMA) voiced concern that the requirement proposed in Item 354-3 was intended only for the taximeter code. NEWMA is not aware of consumer complaints about this feature in other technology areas. Therefore, NEWMA opposes a General Code requirement, believing that it would add unnecessary costs for equipment manufacturers.

At the September 1999 Measuring Sector Meeting, members examined several types of transactions where there is a need for a duplicate receipt, but opposed adding a new paragraph to the General Code. Sector members commented that the proposed requirement would be of particular benefit for transactions in which the buyer is not present (such as during weighmaster operations or vehicle-tank meter home deliveries). Sector members also noted that in theory, electronic devices identify each transaction record with a permanent nonrepetitive reference number. Members also questioned whether retail motor-fuel dispensers equipped with island/dispenser and console printers are capable of communicating that receipts printed at both locations are duplicates. After lengthy discussion, the Sector agreed the proposal should be a code specific requirement.

The WWMA agreed with the Measuring Sector and Gasoline Pump Manufacturers Association (GPMA) that the proposal should be code specific. The WWMA recommended initially modifying the Vehicle-Tank Meter and Liquefied Petroleum Gas Code Sections to address duplicate receipt requirements before considering a General Code requirement.

During the 2000 NCWM Interim Meeting, the Committee acknowledged the prevalence of technology that is capable of producing multiple receipts representing transactions made through multiple types of weighing and measuring devices. The Committee agreed that it is appropriate to require systems capable of providing duplicate receipts to identify the information by the words "duplicate" or "copy" to prevent unintentional errors or fraudulent use of the transaction information. The Committee recognized that exceptions to paragraph G-S.5.6.2. are necessary, such as when labeling standard packages. Therefore, the Committee modified its original proposal reflecting that position. Because of many comments and questions remaining on this issue, the Committee kept this item informational and asked industry and weights and measures officials for input on the modified proposal.

During the 2000 NCWM Annual Meeting, the Committee heard an overwhelming number of comments that this proposal was intended to prevent fraudulent use of duplicate taximeter receipts and should not become a General Code requirement unless other jurisdictions encounter problems with other device types. Consequently, the Committee withdrew this item from the agenda. The Committee noted that it may revisit this issue because of comments that indicate that the requirement may be appropriate for the Liquefied Petroleum Gas and Vehicle Tank Meters Codes and NTEP already applies similar criteria to prevent fraudulent use of transaction information. The Committee also noted that currently duplicate receipt marking requirements are enforced based on Handbook 44 paragraph G-S.2 and the Committee supports this interpretation.

320 Scales Code

320-1 V S.1.4.3.(a) Width; Scale Indicators

(This item was adopted.)

Source: Carryover Item 320-2. (This item originated from the National Type Evaluation Technical Committee Weighing Sector and first appeared on the Committee's agenda in 1999.)

Recommendation: Modify paragraph S.1.4.3.(a) to read:

S.1.4.3. Width. - The width of the index of an indicator in relation to the series of graduations with which it is used shall be not greater than:

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- (a) *the width of the ~~widest~~ narrowest graduation**,
- (b) **the width of the clear space between weight graduations, and**
- (c) **three-fourths of the width of the clear space between money value graduations.**
**[Nonretroactive as of January 1, 2002.]*

When the index of an indicator extends along the entire length of a graduation, that portion of the index of the indicator that may be brought into coincidence with the graduation shall be of the same width throughout the length of the index that coincides with the graduation.

Discussion: NIST Handbook 44 Scales Code paragraph S.1.4.3. (a) requires that the indicator index width be no greater than the width of the *widest* graduation. A similar Measurement Canada requirement requires that the index width be no greater than the width of the *narrowest* graduation. In discussing this difference at its 1999 Meeting, the Weighing Sector agreed that the Measurement Canada requirement is more appropriate because it prohibits an indicator index that obscures any scale graduation. Consequently, the Sector proposed that paragraph S.1.4.3. be modified to correct the discrepancy.

The Scale Manufacturers Association supported the proposal.

During the 1999 NCWM Interim Meeting, the Committee heard no opposition to the proposal and, therefore, made it a voting item on the NCWM S&T Agenda.

At the 1999 Annual Meeting, the Committee considered comments that the current paragraph S.1.4.3. is more appropriate because a wider index design facilitates reading of the graduation. In contrast, when the index design is narrower than the narrowest graduation, users need to read the indication to the nearest graduation. The Committee heard comments about how the proposed change would affect large numbers of analog indicators still in use; however, the proposal is nonretroactive and would apply only to new devices. Measurement Canada restated its belief that the proposal is a more appropriate design requirement for indicator indices than the one currently in Handbook 44. The Committee acknowledged that there is some validity to the existing Handbook 44 requirement and decided to make the item informational to allow additional time for study of the issue. The Committee believed that the proposed change is more appropriate and unless it receives more data supporting the existing Handbook 44 language, the Committee planned to return the proposal to voting status at the 2000 Interim Meeting.

The Western Weights and Measures Association recommended adopting the proposed changes at the 2000 NCWM Annual Meeting unless data is provided to support current Handbook 44 language.

The Measuring Sector noted that the proposal creates no barriers to Canadian requirements. Manufacturers recognize they must design devices to meet the Canadian requirements when seeking both U.S. and Canadian approval. The Sector recommended hearing all arguments on this issue before the Committee recommends the item for a vote.

The Northeastern Weights and Measures Association (NEWMA) recommended that this item move forward for a vote at the 2000 NCWM Annual Meeting if no argument convinces the Committee otherwise. NEWMA believed that the proposal facilitates mutual recognition of devices by the U.S. and Canada.

The Southern Weight and Measures Association (SWMA) agreed that the current Handbook 44 requirement applies during NTEP Mutual Recognition type evaluation and does not conflict with the Canadian requirement. Consequently, SWMA opposed the proposal and recommended withdrawing it from the Committee's agenda.

During the 2000 NCWM Interim Meeting, the Committee again heard opposition to the proposal from one NCWM member who indicated that the current Handbook requirement is correct because the differing graduation sizes facilitate reading the indication and clearly illustrate which are the subordinate graduations. That member also noted that wider indications eliminate any question about the indication starting at zero and lessens the parallax effect because the index coincides with the entire graduation rather than coinciding with only a part of a graduation, thus requiring an interpolation of the indicated value. That member also pointed out that over the past 40 years, there were no problems reading fan and dial scales. The Committee was again cautioned that, if the proposal were added to Handbook 44, some devices with analog indications still in production might not meet the proposed requirements.

The Central Weights and Measures Association (CWMA) noted that when the indicator index extends along the entire length of a graduation, the portion of the index that is brought into coincidence with the graduation shall be of the same width throughout the length of the index. The proposal for an indicator index that is not wider than the narrowest

graduation conflicts with the CWMA position. Therefore, CWMA recommended the proposal be returned to informational status.

The Committee acknowledged that the proposal was originally developed in an attempt to align U.S. and Canadian requirements. However, the Committee agreed that when reading subordinate indications, it is important that these indications not be obscured by the indicator index. At first, the Committee believed that a limited number of manufacturers might be affected by the proposal; however, this group had not commented. The Committee Technical Advisor did contact two manufacturers of mechanical dials who indicated that the proposal did not create any design problems for their production lines. One manufacturer indicated that its graduations are all the same width, and the other bends the tip of the indicator to make the index narrower than the graduation.

The Committee appreciated the input and deliberated at length on this issue at the 2000 Annual Meeting, but it did not receive sufficient specific technical arguments to warrant maintaining the current Handbook 44 requirement. Furthermore, the proposed change is nonretroactive, which should allow those companies that are affected adequate time to comply. Consequently, the Committee recommended modifying paragraph S.1.4.3.(a) as shown in the recommendation above.

The Committee would like to see all devices comply immediately; however, it realizes that this is not practical. The Committee notes that the current language applies until January 1, 2002. Therefore, devices manufactured before 2002, or that are either new or used and placed into commercial service before 2002, comply if their indicator index is not wider than the widest graduation. The Committee does not plan to retain the old Handbook 44 language addressing indices not wider than the widest graduation. The Committee notes that if devices in service prior to 2002 comply with the latest requirement by having an indicator index that is not wider than the narrowest graduation, they also meet the intent of the requirement.

320-2 I Table S.6.3.a. Marking Requirements

Source: National Type Evaluation Technical Committee (NTETC) Weighing Sector

Recommendation: Modify Table S.6.3.a. as follows:

**Table S.6.3.a.
Marking Requirements**

To Be Marked With	Weighing Equipment	Weighing, load-receiving, and indicating element in <u>covered on the same housing CC</u>	Indicating element <u>not permanently attached to weighing and load-receiving element with CC</u>	Weighing and load-receiving element <u>not permanently attached to indicating element¹ with CC</u>	Load cell with CC (11)	Other equipment or device (10)
...						
Section Capacity (14)(20)			x	x		

Add new footnote 1 to Table S.6.3.a. to read as follows:

¹Weighing/load receiving elements and indicators which are in the same housing or which are permanently attached will generally appear on the same CC. Components shall be hard wired together or sealed with a physical or an electronic seal.

Discussion: In 1998, the Weighing Sector discussed the need for NTEP Laboratories to have more definitive guidelines to determine when devices are “not permanently attached.” The Sector heard concern about unmarked indicators because there is no means to determine whether or not the indicator was originally submitted and covered by NTEP as a separate component, or within a single housing and intended as part of system. The Sector agreed that classifying devices as “not permanently attached” should be based on the technical aspects of how the elements interface. The Sector noted that indicators equipped with features that metrologically affect the weighing system must include provisions for sealing those features. In 1998 and 1999, the Sector considered several proposals to modify Table S.6.3.a. and then submitted a proposal to define “permanently attached” to the S&T Committee’s 2000 Interim Agenda.

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The Committee first considered the Sector's proposal to include a new footnote stating that "permanently attached" may be hardwired or secured together with a physical or electronic seal" for elements not permanently attached in Table S.6.3.a. The Committee agreed with one jurisdiction's concern that the proposed footnote may be misinterpreted to mean no markings are required when indicators are physically sealed.

During the 2000 NCWM Interim Meeting, the Committee also reviewed the following alternate proposal from the Scale Manufacturers Association (SMA) to modify Table S.6.3.a. distinguishing the marking requirement for an indicator that is "permanently attached" from the markings on an indicator that is "not permanently attached" and to add a new footnote to Table S.6.3.b.

Table S.6.3.a.
Marking Requirements

Weighing Equipment To Be Marked With	Weighing, load-receiving, and indicating element <u>in covered on the same housing CC</u>	Indicating element not permanently attached to weighing and load-receiving element with CC	Weighing and load-receiving element not permanently attached to indicating element with CC	Load cell with CC (11)	Other equipment or device (10)
→Manufacturer's ID (1)	x	x	x	x	x
→Model Designation (1)	x	x	x	x	x
→Serial Number and Prefix (2)	x	x	x	x	x (4613)
→Certificate of Conformance	x	x	x	x	x
Accuracy Class (17)	x	x (8)	x (19)	x	
±Nominal Capacity (3) (48-14) (20 15)	x	x	x		
±Value of Scale Division, "d" (3)	x	x			
±Value of "e" (4)	x	x			
Temperature Limits (5)	x	x	x	x	
±Concentrated Load Capacity CLC (42 9) (20 15)		x	x (9-6)		
Special Application (43 10)	x	x	x		
Maximum Number of Scales Load Cell Divisions (n _{max}) (65)		x (8)	x (19)	x (17)	
Minimum Verification Scale Division (e _{min})			x (19)		
"S" or "M" (7)				x	
±Direction of Loading (4512)				x	
Minimum Dead Load				x	
Maximum Capacity				x	
Safe Load Limit				x	
Load Cell Verification Interval (v _{min}) (24 16)				x	
±Section Capacity (441) (20 15)		x	x		

For applicable notes see Table S.6.3.b.

→ On serial plate

+ Placed on device at factory or when placed in service

Information no longer needed in Table because the information is on the Certificate of Conformance (CC)

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Add a new note, after renumbering current notes, to read as follows:

17. If other than on the Certificate of Conformance.
(Nonretroactive as of January 1, 200X.)

SMA proposed that an indicating element with a separate Certificate of Conformance (CC) be considered “not permanently attached.” An indicating element and a weighing element can each be tested as separate components, or tested together as a single weighing system. When the indicating element and weighing element are tested as a single weighing system and covered by the same CC, under the SMA proposal the elements would be considered “permanently attached.” The original equipment manufacturer must choose the configuration when the device is submitted for type evaluation, and NTEP tests the device according to the configuration permitted by Handbook 44 and selected by the manufacturer.

The SMA proposal eliminated several marking requirements for devices because the information appears on the CC. The SMA proposal also identified specific information which must appear on the identification plate. Currently, Handbook 44 does not require marking information to appear on a single plate or badge.

The Committee agreed that the SMA proposal shown above had merit over the Sector’s proposal; however, it modified the CC information for elements in a single housing to clarify that the elements are *covered* on the same CC. Based on comments and the user-friendly format of the SMA proposal, the Committee recommended the modified SMA proposal be given informational status while industry and weights and measures officials reviewed it.

During its 2000 Spring Meeting, the SMA revised its proposal, modifying only Table S.6.3.a. column headings. SMA reiterated an earlier position that indicators not permanently attached possess their own CC.

The Committee agreed that the latest SMA proposal, as shown in the recommendation above, addresses the Sector’s original concern and is a more appropriate modification to Table S.6.3.a. to provide guidelines about permanently attached and not permanently attached devices. The Committee also added a new alternate footnote to further clarify the interface between system components as shown in the recommendation above. The Committee believes that the Weighing Sector which developed the original proposal should review the latest wording for clarity and technical merit. Therefore, the Committee made this issue an information item.

320-3 I N.1.3.4.(a) Vehicle Scales, Axle-Load Scales, and Livestock Scales With More Than Two Sections; Prescribed Test Pattern

Source: Southern Weights and Measures Association (SWMA)

Recommendation: Modify paragraph N.1.3.4.(a) as follows:

(a) Prescribed Test Pattern. The normal prescribed test pattern shall be an area of 1.2 m (4 ft) in length and as wide as the scale platform 3.0 m (10 ft) in width or the width of the scale platform, whichever is less. Multiple test patterns may be utilized when loaded in accordance with Paragraph (b).

Discussion: Fairbanks Scale noted that there are 14-foot wide agricultural scales; however, tests patterns used on 14-foot wide scales extend the entire width of the scale and may not represent the actual load concentration on the weighing element. Fairbanks recommended that the test pattern in paragraph N.1.3.4.(a) be modified so that it is consistent with the maximum axle load concentration pattern described in the definition of concentrated load capacity (CLC). Fairbanks expressed concern about advertisements misrepresenting a scale’s CLC when that value is based on weights loaded in test pattern other than prescribed in Handbook 44.

The Southern Weights and Measures Association (SWMA) agreed that the proposed wording aligns paragraph N.1.3.4. with the definition of CLC. The SWMA believed the proposal addresses the growing concern about misrepresenting CLCs on scales wider than 12 feet. The SWMA recommended this item for national review; however, it believes the item should be made informational until the NTEP Participating Laboratories provide input about how the proposal affects existing test equipment.

The Committee considered the following proposal to modify paragraph N.1.3.4.(a):

N.1.3.4. Vehicle Scales, Axle-Load Scales, and Livestock Scales With More Than Two Sections. – A shift test shall be conducted with at least two different test loads and may be performed anywhere on the load-receiving element using the prescribed test patterns and maximum test loads specified below. (Two-section livestock scales shall be tested consistent with N.1.3.8.) (Amended 1991)

- (a) Prescribed Test Pattern. The normal prescribed test pattern shall be an area of 1.2 m (4 ft) in length and ~~as wide as the scale platform~~ 2.4 m (8 ft) in width. Multiple test patterns may be utilized when loaded in accordance with Paragraph (b).
(Part (a) Amended 1997)

Several Western Weights and Measures Association (WWMA) members questioned the need for the proposal because the current Handbook 44 definition of CLC states that CLC is a rating for a group of two axles with a centerline spaced 4 feet apart and an axle width of 8 feet. The WWMA believes that the existing CLC definition adequately describes the test pattern for test and use and does not require a corresponding description in the test notes.

The WWMA believes that an educated scale customer can detect when CLCs are misrepresented, thus deterring improper use of wider scale configurations. The WWMA noted that the proposal would restrict jurisdictions from testing scales when test carts exceed 8 feet. One weights and measures official expressed concern that side-by-side scales create greater possibilities for inaccuracies during weighments because there are variations in the actual tire patterns. The WWMA asked for input from the NTEP Laboratories that perform tests on side-by-side scales with various types of deck designs. The WWMA is interested in determining whether any current test procedures are in conflict with the proposal. The WWMA is also interested in test procedures other countries use to perform on side by side scales and other wide scale configurations. One WWMA member asked if paragraph N.1.3.4.(d) Other Designs may already address the shift test for side-by-side scale installations.

The WWMA supported the principles of the proposal shown above; however, the WWMA asked for feedback from other regional associations, NTEP Participating Laboratories, and the Weighing Sector on the effects of this proposal on testing equipment before taking a position on the proposal.

During the 2000 NCWM Interim Meeting, the Committee heard a suggestion to address test patterns for scales which are 10 feet wide or less separately from those that exceed 10 feet in width. The Committee still had concerns that the proposal may impose restrictions on weights and measures field test equipment. Safety issues may occur when large amounts of test weights are stacked within the 4-foot by 8-foot test pattern. The Committee agreed that the proposal had merit because scale accuracy tests “as used” are necessary and are the best indicator of device performance. Based on the concerns about safety and test equipment, the Committee gave this item informational status and requested further input from all affected parties.

One jurisdiction noted that the concept of CLC was permitted with the understanding that it was not intended to be restrictive (i.e., officials using weight carts during testing). They also questioned whether or not the proposal might be primarily intended to address marking issues.

The Central and Northeastern Weights and Measures Associations and Scale Manufacturers Association recognize the restrictions created by an 8-foot test pattern limit and supported changing the width of the test pattern to 10 feet.

The jurisdictions and NTEP laboratories still had safety and equipment concerns about stacking weights and weight carts in a 8-foot wide test pattern. One solution to those concerns was to allow a test pattern of 10 feet or the scale width, whichever is less. The alternate test pattern width might resolve all issues with the original proposal, as well as the problem with wider scale configurations.

The Committee understands the Metrology Subcommittee is interested in gathering data on weight cart dimensions to avoid similar conflicts between any new weight cart standards and existing or proposed Handbook 44 requirements. At the 2000 Annual Meeting, the Committee agreed it was appropriate to modify the test pattern width to 10 feet rather than 8 feet. The Committee further modified the proposal to include text to clarify the maximum allowable width of the test pattern as shown in the recommendation above. The Committee asked for input on the latest recommendation.

320-4 VC N.1.3.4. Vehicle Scales, Axle-Load Scales, and Livestock Scales With More Than Two Sections; Shift Test

(This item was adopted as part of the consent calendar.)

Source: Central Weights and Measures Association (CWMA)

Recommendation: Modify paragraph N.1.3.4. as follows:

N.1.3.4. Vehicle Scales, Axle-Load Scales, and Livestock Scales With More Than Two Sections. – A At least one shift test shall be conducted with at least two different test loads a minimum test load of 12.5% of scale capacity and may be performed anywhere on the load-receiving element using the prescribed test patterns and maximum test loads specified below. (Two-section livestock scales shall be tested consistent with N.1.3.8.)

Discussion: The Committee considered the following CWMA proposal to reduce the number of test loads for a shift test from two to one.

N.1.3.4. Vehicle Scales, Axle-Load Scales, and Livestock Scales With More Than Two Sections. – A shift test shall be conducted with at least two different test loads a test load of at least 12.5% of scale capacity and may be performed anywhere on the load-receiving element using the prescribed test patterns and maximum test loads specified below. (Two-section livestock scales shall be tested consistent with N.1.3.8.)

The CWMA based their proposal on its findings after reviewing data from the State of Kansas listed in the following table:

Vehicle Scale Section Test Data	Number of Scales	
	Kansas (April 1, 1998-June 1, 1999)	California
Total Number of Scales Tested	144	121
Scales in Tolerance at 13 000-lb and 25 000-lb Test Loads	85	94
Scales In Tolerance at 13 000-lb, <u>but</u> Out of Tolerance at 25 000-lb	28	6
Scales Out of Tolerance at 13 000-lb, <u>but</u> In Tolerance at 25 000-lb	0	4
Scales Out of Tolerance at 13 000-lb <u>and</u> 25 000-lb	30	17
Scales Out of Tolerance at 13 000-lb <u>and</u> 25 000-lb, where errors occurred in different areas of the platform	1	

CWMA agreed that the data supports conducting one shift test at maximum test load and provides sufficient data to reveal any problems with the scale sections. Additionally, CWMA agreed that an increasing load test is also sufficient to reveal linearity problems. CWMA found that time spent testing the scale is reduced without omitting any essential elements of the test. Jurisdictions that use trucks to conduct the shift tests would not need to run the truck across the scale fully loaded and empty to comply with the proposed requirement. The proposal does not prohibit a jurisdiction from conducting more shift tests.

During the 2000 NCWM Interim Meeting, Montana and New York reported they had scale test data that would support accepting shift tests performed with one test load. California completed their survey and provided data to the Committee (see table above). California indicated they conducted shift tests with test loads of approximately 20 000 pounds and 41 000 pounds. The Kansas and California data appears to demonstrate that performing shift tests with 20 000-pound test loads detected scales out of tolerance which were found to comply at lesser test loads. In many instances, a 20 000-pound test load represents a break point in scale tolerances.

The Committee considered a proposal to modify paragraph N.1.3.4.(a) by removing the requirement for shift tests at two different test loads. After discussing the Kansas data and Montana’s reporting, the Committee agreed that, if it is done

properly, a shift test conducted with only one test load would be acceptable as a minimum test requirement. The Scale Manufacturers Association noted the importance of performing midspan tests. One manufacturer cautioned that running a vehicle across the scale is not a sufficient shift test; and suggested a test using a vehicle's hydraulics to tilt the vehicle and shift the weights to concentrate the weight load on one axle to simulate actual vehicle loads. Handbook 44 does not address either procedure.

The Committee later agreed with an alternate proposal from New York that requires a minimum test load of 12.5 percent of scale capacity if shift tests are conducted with only one test load. New York indicated the 12.5 percent test load was acceptable based on their experience with jurisdictions that must move weights by hand. The Committee discussed whether or not the proposed language varies from Table 4. In Table 4, the test load is in terms of 25 percent of the device capacity for scales rated at 40 001 pounds or more, whereas the proposal specifies a 12.5 percent test load for the minimum shift test load which may include a combination of field standard test weights and any other applied load. The Committee intended the proposal to be different than Table 4 and agreed with the rationale used to establish a minimum test load; it therefore recommended the modified proposal for a vote.

During the 2000 NCWM Annual Meeting, the Committee reiterated that the proposal was not intended to conflict with other tests performed using the test weight and test load guidelines addressed in Table 4. Minimum Test Weights and Test Loads. The Committee agreed to include additional language in the proposal to clarify at least one test load must be used and the minimum amount of weight for the test load as shown in the recommendation above.

320-5 V UR.3.9. Use of Manual Gross Weight Entries; Vehicle Scales

(This item was adopted.)

Source: National Type Evaluation Technical Committee (NTETC) Weighing Sector

Recommendation: Modify paragraph UR.3.9. Use of Manual Gross Weight Entries to address the use of manual gross weight entries for vehicle scale applications as follows:

UR.3.9. Use of Manual Gross Weight Entries. –

Manual gross weight entries are permitted for use in the following applications only: (1) ~~in point-of-sale systems interfaced with scales~~ when credit is being given for a weighed item on point-of-sale systems interfaced with scales; (2) when a device or system is generating labels for standard weight packages; (3) when postal scales or weight classifiers are generating manifests for packages to be picked up at a later time; ~~and~~ or (4) ~~on~~ when livestock and vehicle scale systems ~~that generate weight tickets to correct erroneous tickets~~. (Added 1992)

Discussion: During the 1999 Weighing Sector Meeting, weights and measures officials reported finding vehicle scale installations issuing manual gross weight entry tickets. Handbook 44 lists four applications where it is permissible to issue manual gross weight entries; however, vehicle weighing operations are not part of that list. The Sector acknowledged that there are questions about the original intent of paragraph UR.3.9. because indicators which have Certificates of Conformance list "manual gross weight entries" as an optional feature are being used in vehicle weighing applications. The use of manual gross weight entries was created to assist weighing operations when communications break down. The S&T Committee believes that paragraph UR.3.9. was not intended to permit manual gross weight entries in vehicle weighing operations.

Sector members listed numerous instances where scale operators in a variety of vehicle scale applications might issue manual gross weight entry tickets. Examples cited involve installations where visual confirmation of the vehicle being weighed is not possible and/or where the weighing operation occurs at a rapid pace. These conditions lead to a mismatch of vehicles and their respective tare weights. One jurisdiction noted that it permits manual gross weight entries for erroneous weighmaster tickets (transfer of transaction information to other tickets); however, the ticket must be numbered and the correction noted.

The Sector agreed to work on a proposal to include the manual gross weight entry feature in the Publication 14 list of sealable features. The Sector developed two options for modifying paragraph UR.3.9. to allow manual gross weight entries in vehicle scale operations. The Sector's first option allowed manual gross weight entries to correct erroneous tickets on any weighing system whereas the second option limited manual gross weight entries on larger capacity scales to livestock and vehicle scales generating erroneous tickets.

The Committee heard that several jurisdictions already permit correcting erroneous tickets in vehicle scale applications; but do not allow changes to the weight entry. However, these jurisdictions also have policies which address issues such as tracking and identifying entries, documenting tickets, and reweighing loads if the weight is erroneous to deter fraudulent use of this feature. The Committee believes that the frequent number of weighments and layout of vehicle weighing operations interfere with observing each weighment leading to issuing erroneous tickets.

The Committee cautioned that vehicle scale installations must adhere to the conditions in paragraph S.1.12. Manual Gross Weight Entries when using manual gross weight entries. Paragraph S.1.12. requires that devices accept a manual entry of weight only when the scale is at zero in the gross weight display mode and the recorded manual weight entry is identified by required terms or symbols.

Based on discussions about errors that occur during vehicle weighing operations, the Committee agreed that the Sector's second option to modify paragraph UR.3.9. to include an exemption for vehicle scale systems is appropriate. The Committee recommended that proposal, with some editorial modifications for a vote.

320-6 I Appendix D; Definition of Substitution Test and Test Load

(This item was changed from a voting item to an information item at the Annual Meeting)

Source: Western Weights and Measures Association (WWMA)

Recommendation: Add the following definitions for substitution test and test load to Handbook 44:

substitution test. The test of a scale in which material, product, or other objects are substituted in amounts equal to the known test weights on the load-receiving element of the scale for known test weights, and then the known test weights are placed on the load-receiving element again. This process shall not be repeated more than three times. It permits the scale to be tested to a load greater than the amount of known test weights available. The tolerances for the substitution test are the tolerances for the entire test load developed using the substitution test procedure.

test load. The sum of the combination of field test standard test weights and any other applied load used in the conduct of a test using substitution test methods.

Discussion: The WWMA believes that there is a need to define substitution test. The WWMA reviewed three proposed definitions of the term "substitution test." There was concern that the proposed definition appearing on its agenda was too similar to the definition of a strain load test. Two alternate definitions clarified that the amount of substituted material must be close to the amount of known test weight; however, they required editorial changes for clarity. The WWMA agreed that there is greater confidence in the test when the amount of substituted weight is brought or adjusted to the exact amount of error as the known weight. The final format of the proposed definition is similar to the current definition of "strain load"; however, the WWMA clarified the process, test material, and tolerances to apply. The WWMA combined text from all three proposals to arrive at the recommendation shown above. The WWMA recognized that the term "test load," refers to substitution test in Footnote 1 Table 4 Minimum Test Weights and Test Loads; however, the term is not listed in Handbook 44 definitions. Therefore, the WWMA proposed that a definition for test load be taken from the text in Footnote 1.

The WWMA asked that a Metrology Subcommittee representative review the proposal to determine any unreasonable uncertainties which might result from the process described in the proposed substitution test definition. The WWMA recommended the proposed definitions for a vote.

The Metrology Subcommittee reviewed the concept of substitution testing and agreed that the uncertainties associated with the test procedure can be estimated. The Subcommittee believes that this is possible given the level of accuracy that is possible in a field environment when trying to verify the weight of materials and product for use as a field standard by comparing that material with known standards. The Subcommittee is concerned with the additive uncertainties in the test process and their effect on the Fundamental Consideration requirement for standard errors. The Fundamental Consideration states that the error in a standard used by a weights and measures official should be known and corrected for when the standard is used; or if the standard is to be used without correction, its error should be not greater than one-third of the smallest tolerance to be applied when the standard is used. Also, whenever it can readily be done, it will be desirable to reduce the error on a standard below the one-third point previously mentioned.

The Subcommittee provided the following example of a substitution test to demonstrate its concern about the additive effect of uncertainties in the process.

Given a 50 000-pound capacity scale with 20-pound scale divisions and 10 000 pounds of known test weights:

Corresponding Table 6 Applicable Maintenance Tolerances			
Test Load (lb)	Corresponding Scale Divisions for Test Load	Tolerance in Scale Divisions	Tolerance (lb)
0-10 000	0-500	1 d	20
10 020-20 000	501-1000	2 d	40
20 020-30 000	1001-1500	3 d	60
30 020-40 000	1501-2000	4 d	80
40 020-50 000	2001-2500	5 d	100

The uncertainty of the standard and materials has a cumulative affect on the uncertainty of the test procedure as the process is repeated; therefore, the procedure is limited to three substitutions. During the field substitution test process, the conditions are not ideal because of environmental conditions beyond the control of the weights and measures official. The amount of materials should be exactly that of the known standard; therefore, lessening the uncertainty in the process because the official is unable to factor in the instability of the substituted materials. The procedure does not fully account for allowable error of the test standard. The official is not in a laboratory environment making comparisons with a single standard.

The tolerance on the 10 000-pound known weights is 1 pound based on NIST Handbook 105-1, Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures, allowable tolerance. The Fundamental Consideration allows the error of the standard that is not greater than one-third of the smallest tolerance allowed when the standard is use or not greater than one third of the smallest tolerance applied to the standard. Therefore, an allowable testing uncertainty must be less than one-third of the tolerance, or less than 0.33 pound. Thus, the test procedure starts with a 0.33-pound uncertainty of the Standard.

It may be possible to conduct the test procedure and determine the accuracy of the known standard weights to within $\frac{1}{2}$ d or 10 pounds; however, that assumption can only be validated with actual scale data. Similar guidelines apply to the first substituted material for determining the uncertainties of the test process. A comparison of the first load of substituted material would have a minimum uncertainty of 10.33 pounds if the uncertainties are added together.

If following accepted uncertainty guidelines where $k=2$ and 95 percent with root sum square methods, the uncertainty would be slightly over 20 pounds for each substitution. This also assumes that the determination of each substitution is unrelated or established separately. The uncertainty is valid assuming (1) the scale has good repeatability; (2) the standard deviation for the measurement process is zero; (3) an accurate procedure is followed while weighing the material or product; and (4) no other errors are introduced into the procedure.

The uncertainty that result from repeating the substitution process are as follows:

Uncertainty of the Substituted Material for Sample 1 is 10.33 pounds
 Uncertainty of the Substituted Material for Sample 2 is 10.33 pounds
 Uncertainty of the Substituted Material for Sample 3 is 10.33 pounds
 Uncertainty of the Substituted Material for Sample 4 is 10.33 pounds

The total cumulative uncertainty at a 50 000-pound test load (10 000 pounds known standards plus 40 000 pounds substituted material) is 41.65 pounds. The device tolerance at 50 000 pounds is 100 pounds and one-third of 100 pounds is 33.33 pounds; however, this example uses the entire amount of allowable error which represents an unreasonable uncertainty.

In 1991, Ross Andersen (NY) documented Substitution and Strain Load Test Procedures in the S&T Final Report. That information is found in NIST Special Publication 816, S&T Item 320-21, Appendix A, Testing Large Capacity Platform Scales Reflecting 1989 and 1990 Changes to NIST Handbook 44.

The Northeastern Weights and Measures Association (NEWMA) questioned the text in the definition for substitution test proposed by the WWMA which states, "in amounts equal to the known test weight." NEWMA believed that the substitution method of testing was developed to allow use of materials other than known weights. The amount of substituted material may be up to the amount of certified test weight applied to the load receiving element. NEWMA noted difficulty in attaining the exact amount of weight using warehouse-loaded pallets, ingots, etc., in actual testing applications. NEWMA believed the proposed substitution definition is too restrictive. NEWMA agrees in principle with WWMA's comment that, "There is greater confidence in the test when the amount of substituted weight is brought to the exact amount as the known test weight"; however, NEWMA also recognized the difficulty and time required for field inspectors to obtain an exact amount of weight and the added burden created for the user. NEWMA believed that in many instances officials must take an inordinate amount of time to locate substitution weights that are equivalent to the exact amount of the certified test weight load. NEWMA also noted that Handbook 44, 2.22 Automatic Bulk Weighing Systems, does not place limitations on the number of substitution tests.

At the 2000 Interim Meeting, the Committee heard discussions that limiting the number of substitutions during the test to three was established because, with more substitutions, uncertainties (in the process, standards, etc.) exceed the allowable tolerances recommended in the fundamental considerations for reference standards. The Committee agreed with the need to define "substitution test" and "test load" in Handbook 44 to ensure that the terms are uniformly interpreted. The Committee agreed the proposal addresses the tolerances to apply, acceptable types of test loads, and the process used to conduct a substitution test.

The Committee recognizes the confusion about the subtle differences in procedures and tolerances that apply to the scale verification processes known as "substitution," "strain," and "build-up" tests. The Technical Advisor to the National Type Evaluation Technical Committee Weighing Sector advised the Committee that six States have volunteered to provide data on test procedures should the S&T Committee decide further study is needed.

The Committee considered several alternate proposed definitions for substitution test which used various wording to clarify the concept. The Committee believes that the detailed steps involved in the procedure are better addressed in an examination procedure.

During the 2000 NCWM Annual Meeting, several jurisdictions recommended multiple alternate definitions for substitution test. The definitions were developed (1) to include current Handbook 44 terminology, (2) to further clarify the procedure, (3) to remove the limitation on three tests and requirement for substituting the exact amount of material, or (4) to provide a definition that includes less procedural information. The Committee believes that the detailed steps involved in the procedure are better addressed in an examination procedure, and separate test notes that address the procedures that should be followed to test various scale types such as axle load scales, vehicle scales, and hopper scales may be appropriate. Consequently, the Committee changed the status of this issue from a voting item to an information item. The Committee acknowledges the Metrology Subcommittee for its input on this proposal and thanks them.

321 Belt-Conveyor Scale Systems

321-1 VC N.3.2. Material Tests and N.3.2.1. Accuracy of Material

(This item was adopted as part of the consent calendar.)

Source: Carryover Item 321-1. (This item originated from the Western Weights and Measures Association and first appeared on the Committee's 1998 Agenda Item 321-1.)

Recommendation: Modify paragraphs N.3.2.1. Accuracy of Material and N.3.2. Material Tests as follows:

N.3.2. Material Tests. – Use bulk material, preferably that material for which the device is normally used. Either pass a quantity of pre-weighed material over the belt-conveyor scale in a manner as similar as feasible to actual loading conditions, or weigh all material that has passed over the belt-conveyor scale. Means for weighing the material test load will depend on the capacity of the belt-conveyor scale and availability of a suitable scale for the test. To assure that the test load is accurately weighed and determined, the following precautions shall be observed:

(d) ~~When a railway track scale is used to weigh the test load, not more than 48 hours should elapse between~~ Where practicable, a reference scale should be tested within 24 hours before the determination of the weight of the test load used for a ~~on the~~ belt-conveyor scale ~~and the~~

~~determination of the weight of the material test load. When other scales are used, the elapsed time should be not more than 8 hours.~~

A reference scale which is not “as found” within maintenance tolerance should have its accuracy re-verified after the belt-conveyor test with a suitable known weight load if the “as found” error of the belt-conveyor scale material test exceeds maintenance tolerance values.

(e) If any suitable known weight load other than a certified test weight load is used for re-verification of the reference scale accuracy, its weight shall be determined on the reference scale after the reference scale certification and before commencing the belt scale material test.

(ef) The test shall not be conducted if the weight of the test load has been affected by environmental conditions.

Note: Even if the reference scale is within maintenance tolerance it may require adjusting to be able to meet paragraph N.3.2.1.

~~N.3.2.1. Accuracy of Material. – The quantity of material comprising used to conduct the a material test shall be weighed statically or on an uncoupled-in-motion railway track scale a reference scale to an accuracy of at least within 0.1 percent. The scale used to weigh material shall be tested immediately prior to running the material test; where practicable, the substitution method of weighing should be used. Scales typically used for this purpose include Class II, III, and III L scales or a scale without a class designation with the tolerance as described in Table T.1.1. of Handbook 44 Section 2.20.~~

(Added 1989)(Amended 1991, 1993, and 1998)

Discussion: During the 1999 Annual Meeting, the Committee reviewed the Belt Conveyor Scale Sector Subcommittee’s latest proposal addressing the necessary conditions to conduct a material test. The Committee encouraged the Subcommittee to reach a proposal that is agreeable to all parties by the October 1999 Sector Meeting; however, that meeting was cancelled. The Committee believed that the Subcommittee was close to resolving the concerns heard during the 1999 Annual Meeting about the restrictive nature of the proposed “24 hour period” for the accuracy test of both the materials and reference scale. The Committee was interested in input from the entire Belt Conveyor Scale Sector.

In 1999, the Western Weights and Measures Association (WWMA) supported the language developed by the Belt Conveyor Scale Sector Subcommittee. The WWMA recognized that the Belt Conveyor Scale Sector would not meet in 1999 and amendments to Handbook 44 are not normally within the Sector’s purview. Nevertheless, the Committee encouraged the Sector to comment on all carryover and new proposals relative to the Belt-Conveyor Scale Systems Code.

During the WWMA open session, a scale testing firm representative noted the importance of clarifying the conditions necessary for an official test and the accuracy of the reference scale based on known weight. One manufacturer commented the use of the term “where practicable” in paragraph N.3.2.(d) is vague. One weights and measures official agreed with the latest Subcommittee proposal and noted that flexibility is necessary in scheduling the reference scale test. The official also noted that four mines in his jurisdiction also agreed with the latest proposal.

During the Central Weights and Measures Association (CWMA) meeting, comments were heard about the difficulties of testing a reference scale immediately after the material test. However, some participants commented about the importance of retesting a reference scale to ensure the validity and accuracy of the material test of the belt-conveyor scale.

The Northeastern Weights and Measures Association supported the language developed by the Belt Conveyor Scale Sector Subcommittee.

The Southern Weights and Measures Association (SWMA) recommended that this item maintain informational status until the Belt Conveyor Scale Sector develops a proposal with which all Sector members agree. SWMA recommended that the NCWM Chairman designate funding for the Sector to review Handbook 44 proposals because the Sector’s expertise in belt-conveyor scale system technology is essential when addressing proposals to modify Handbook 44.

During the 2000 NCWM Interim Meeting, one belt-conveyor scale system manufacturer noted that there is no legal strength in a procedure required to be enforced “where practicable.” One member of the Belt Conveyor Scale Subcommittee noted that testing the reference scale “where practicable” within 24 hours of the material test was a compromise because “real-world” belt-conveyor scale installations often do not have a dedicated reference scale or easy

access to a reference scale. The Committee agreed that data or arguments supporting more stringent requirements were not made available. One Committee member noted installations where the accuracy of reference scales are in question may contractually have some recourse to ensure verification of the system's accuracy.

During the 2000 NCWM Annual Meeting, the Committee heard comments that the text does not explain that a reference scale found out of maintenance tolerance requires additional testing and adjustment to determine its capability of attaining an accuracy of 0.1 percent. The Committee editorially added a note to paragraph N.3.2. to clarify that although the reference scale is within maintenance tolerance the scale may need adjusting to meet paragraph N.3.2.1. The Committee also heard comments about difficulty understanding the rationale requiring a scale being used as a reference scale to perform to a tighter tolerance than Handbook 44 requires for a commercial scale. The 0.1 percent accuracy was based on the "Fundamental Consideration Tolerance for Standards" which recommends that the standard error should not be greater than one-third of the tolerance applied to the device. According to paragraph T.1. Tolerance Values, the error applied to the belt-conveyor scale is 0.25 percent. One-third of that value is 0.08 percent, which is 0.1 percent when rounded to the nearest one-tenth percent.

One Committee member questioned whether testing procedures for reference scales in all applications (e.g., mass flow meter field standard tests) should be reviewed for consistency. The Committee agreed that the proposal focuses on reference scale accuracy rather than the type of reference scale. It allows scale operators and weight and measures officials flexibility in the type of reference scale, yet addresses the concerns about reference scale accuracy heard in 1998. The Committee acknowledges the Metrology Subcommittees concerns about the repeatability and accuracy of a reference scale, accounting for the instability of the materials, following accuracy guidelines for standards in the Fundamental Consideration, and other uncertainties that can have a cumulative affect on the error in the measurement process. The Committee examined real-world accuracy issues and believes that the proposal provides an acceptable set of conditions for performing material tests and recommended this item for a vote.

For additional information on this item, refer to the NCWM 1998 and 1999 S&T Final Report.

321-2 VC UR. 2.2. Conveyor Installation and UR.2.2.1. For Scales not Installed by the Manufacturer

(This item was adopted as part of the consent calendar.)

Source: Carryover Item 321-2. (This item originated from the National Type Evaluation Technical Committee Belt Conveyor Scale Sector and first appeared on the Committee's 1999 Agenda Item 321-2.)

Recommendation: Modify paragraph UR. 2.2. Conveyor Installation as follows:

UR.2.2. Conveyor Installation. - The design and installation of the conveyor leading to and from the belt-conveyor scale is critical with respect to scale performance. The conveyor may be horizontal or inclined, but, if inclined, the angle shall be such that slippage of material along the belt does not occur. Installation shall be in accordance with the scale manufacturer's instructions and the following:

- (a) **Installation-General.** - A belt-conveyor scale shall be so installed that neither its performance nor operation will be adversely affected by any characteristic of the foundation, supports, or any other equipment;
- (b) **Live Portions of Scale.** - All live portions of the scale shall be protected by appropriate guard devices to prevent accidental interference with the weighing operation;
- (c) **Storage of Simulated Load Equipment.** - Suitable protection shall be provided for storage of any simulated load equipment.

~~UR.2.2.1. For Scales not Installed by the Manufacturer. — Unless the scale is installed in a conveyor designed and furnished by the scale manufacturer or built to the scale manufacturer's specifications, the conveyor shall comply with the following minimum requirements:~~

~~(Amended 1998)~~

- (ad) **Take-up Device.** - If the belt length is such that a take-up device is required, this device shall be of the counter-weighted type for either vertical or horizontal travel.
- (be) **Scale Location and Training Idlers.** - The scale shall be so installed that the first weigh idler of the scale is at least 6 m (20 ft) or 5 idler spaces, whichever is greater, from loading point, skirting, head or tail pulley, or convex curve in the conveyor. Any training idler shall be located at least 18 m (60 ft) from the center line of the weigh span of the scale. Training idlers shall not be restrained at any time in order to force belt alignment.
(Amended 1998)
- (ef) **Concave Curve.** - If there is a concave curve in the conveyor, before or after the scale, the scale shall be installed so that the belt is in contact with all the idler rollers at all times for at least 6 m (20 ft) or 5 idler spaces, whichever is greater, before and after the scale². A concave curve shall start no closer than 12 m (40 ft) from the scale to the tangent point of the concave curve.
(Amended 1998)
- (dg) **Tripper and Movable Pulleys.** - There shall be no tripper or movable head pulleys in the conveyor.
- (eh) **Conveyor Length.** - *The conveyor shall be no longer than 300 m (1000 ft) nor shorter than 12 m (40 ft) from head to tail pulley.
[Nonretroactive as of January 1, 1986.]*
- (fi) **Conveyor Stringers.** - Conveyor stringers at the scale and for not less than 6 m (20 ft) before and beyond the scale shall be continuous or securely joined and of sufficient size and so supported as to eliminate relative deflection between the scale and adjacent idlers when under load. The conveyor stringers should be so designed that the deflection between any two adjacent idlers within the weigh area does not exceed 0.6 mm (0.025 in) under load.
- (gi) **Identification of Scale Area.** - The scale area and 5 idlers on both ends of the scale shall be of a contrasting color, or other suitable means shall be used to distinguish the scale from the remainder of the conveyor installation, and the scale shall be readily accessible.
(Amended 1998)
- (hk) **Belt Composition and Maintenance.** - Conveyor belting shall be no heavier than is required for normal use. In a loaded or unloaded condition, the belt shall make full contact with the carry roll (center or horizontal portion) of the idlers. Splices shall not cause any undue disturbance in scale operation (see N.3.).
(Amended 1998)
- (il) **Uniformity of Belt Loading and Flow.** - The conveyor loading mechanism shall be designed to provide uniform belt loading. The distance from the loading point to the scale shall allow for adequate settling time of the material on the belt before it is weighed. Feeding mechanisms shall have a positive closing or stopping action so that material leakage does not occur. Feeders shall provide an even flow over the scale through the full range of scale operation. Sufficient impact idlers shall be provided in the conveyor under each loading point to prevent deflection of the belt during the time material is being loaded.
- (jm) **Belt Alignment.** - The belt shall not extend beyond the edge of the idler roller in any area of the conveyor.
(Amended 1998)

Discussion: In 1999, the National Type Evaluation Technical Committee, Belt Conveyor Scale Sector discussed the differences in requirements “for scales not installed by the manufacturer.” Sector members noted that the existing belt-

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conveyor scale systems code no longer reflects today's electronic devices and marketplace applications. Initially, it was thought that the phrase "for scales not installed by the manufacturer" was added to provide some control over installations that included weigh feeders. The requirements associated with this language now appear to be enforced for belt-conveyor scales systems where the system installer is other than the original equipment manufacturer. It was suggested that the code might need to be revisited to determine if existing requirements are appropriate to apply to particular applications, such as the food industry, and possibly to define terms such as "weigh feeders." The Sector agreed that the requirements in paragraph UR.2.2.1. are appropriate for all belt-conveyor scales systems, including those installed by the original equipment manufacturer. Therefore, the Sector recommended that the text in the preamble of UR.2.2.1. be removed and the subsections renumbered to become part of paragraph UR.2.2.

In 1999, the Committee had several concerns with UR.2.2.1.: (1) the perception that manufacturers and installers are held to different requirements; (2) the wording restricts new technology and does not address applications, such as "weigh feeders"; and (3) the requirements focus more on the device's design rather than on performance. The Committee heard one manufacturer's comments that the proposal may make some scales less than 40 feet long noncompliant with Handbook 44. The Committee changed the item's status to informational allowing time for addressing these objections. The Committee strongly encouraged the Sector and other interested parties to address these issues to align the belt-conveyor scale requirements with others requirements in Handbook 44, thus making no distinction based on the equipment installer.

In 1999, the WWMA also heard one manufacturer comment that the proposal would restrict systems less than 40 feet long. The manufacturer felt that the minimum number of idler requirement in paragraphs UR.2.2.1.(b) Scale Location and Training Idlers and (g) Identification of Scale Area may prohibit short conveyor installations. The WWMA strongly encouraged the Sector to address these issues and work to align the belt-conveyor scale requirements with others in Handbook 44. The WWMA heard no further objection to the proposal. The WWMA believed that the short conveyor issues should be handled through a separate proposal. The WWMA encouraged alignment of the belt-conveyor scale requirements with others in Handbook 44, making no distinction about who must comply with design requirements, and therefore supported the proposal as written.

The Northeastern Weights and Measures Association supported the latest language developed by the Belt Conveyor Scale Sector.

The Southern Weights and Measures Association (SWMA) recommended that this item maintain informational status until the Belt Conveyor Scale Sector develops a proposal to which all Sector members agree. The SWMA also recommends that the NCWM Chairman designate funding for the Sector meeting to review Handbook 44 proposals in addition to NTEP issues because the Sector's expertise in belt-conveyor scale system technology is essential when addressing proposals to modify Handbook 44.

During the 2000 NCWM Interim Meeting, the Committee heard comments from one railroad representatives that design requirements have no place in Handbook 44. In contrast, one scale operator noted that scale owners need guidelines to ensure accuracy and performance of final installation. The Committee agreed that guidelines are appropriate, and that the proposal should move forward for a vote as written.

For additional background information, refer to the 1999 S&T Final Report.

321-3 I UR.2.2.1.(h) For Scales not Installed by the Manufacturer; Belt Composition and Maintenance

Source: Carryover Item 321-3. (This item originated from the National Type Evaluation Technical Committee Belt Conveyor Scale Sector and first appeared on the Committee's 1999 Agenda as Item 320-3.)

Discussion: The Committee considered a proposal from the NTETC Belt Conveyor Scale Sector's proposal to amend paragraph UR.2.2.1. (h) Belt Composition and Maintenance for Scales not Installed by the Manufacturer to read as follows:

**UR.2.2.1. For Scales not Installed by the Manufacturer. – Unless the scale is installed in a conveyor designed and furnished by the scale manufacturer or built to the scale manufacturer's specifications, the conveyor shall comply with the following minimum requirements:
(Amended 1998)**

- (h) **Belt Composition and Maintenance.** - Conveyor belting shall be no heavier than is required for normal use. In a loaded or unloaded condition, the belt shall make ~~full~~ continuous contact with the carry roll (center or horizontal portion) of the idlers. Splices shall not cause any undue disturbance in scale operation (see N.3.). (Amended 1998 and 200X)

During the WWMA 1999 Technical Conference, one scale testing representative noted that in cold weather the belt in a belt-conveyor scale system becomes stiff and makes less contact with the rollers thereby changing scale accuracy. Additionally, the WWMA discussed concerns about belt thickness which affects belt contact with the rollers. The WWMA believes the belt must contact the carry roll idlers to ensure scale accuracy; however, a field official must determine whether or not contact interferes with the proper operation of the scale. The WWMA felt that the proposed term “continuous” and “full” do not provide sufficient guidance about proper belt contact. Consequently, the WWMA recommended modifying paragraph UR.2.2.1.(h) as follows:

UR.2.2.1. For Scales not Installed by the Manufacturer. – Unless the scale is installed in a conveyor designed and furnished by the scale manufacturer or built to the scale manufacturer’s specifications, the conveyor shall comply with the following minimum requirements: (Amended 1998)

- (h) **Belt Composition and Maintenance.** - Conveyor belting shall be no heavier than is required for normal use. In a loaded or unloaded condition, the belt shall make ~~full~~ continuous contact with the carry roll (center or horizontal portion) of the idlers. Splices shall not cause any undue disturbance in scale operation (see N.3.). (Amended 1998 and 200X)

During discussions at the 2000 NCWM Interim Meeting, the Committee expressed its concerns that the proposal is unclear about how much of the belt must contact the carry roll. The Committee decided to maintain the item as informational to enable the Sector to clarify the technical concerns about the proposal.

During the 2000 NCWM Annual Meeting, the Committee heard comments that the proposal as written does not address the original problems that can occur because of improper belt thickness. The current proposal might imply that this is a belt alignment requirement because of the reference to multiple idlers. The original intent was to ensure that the appropriate belt thickness is maintained at a particular installation. The Committee is keeping this issue an information item and asks for input from industry and weights and measures officials to ensure that the proposal addresses all of the original concerns about proper belt thickness. The Committee encourages the Belt Conveyor Sector to cover this proposal at its next meeting.

For additional background, refer to the 1998 and 1999 S&T Final Reports.

321-4 VC UR.3.2. (b) Maintenance

(This item was adopted as part of the consent calendar.)

Source: Western Weights and Measures (WWMA)

Recommendation: Modify UR.3.2.(b) Maintenance as follows:

UR.3.2.(b) Maintenance

- (b) **Simulated load tests or material tests shall be conducted at periodic intervals between official tests, to provide reasonable assurance that the device is performing correctly. The action to be taken as a result of ~~simulated load~~ the tests is as follows:**

Discussion: The WWMA considered the following proposal to modify paragraph to N.1.2 recognize material tests as a way to monitor scale performance:

N.1.1. Official Test. – An official test of a belt-conveyor scale system shall be a materials test witnessed by the official statutory authority or their designated representative. All other material tests between the official test shall not be used for official certification.

N.1.2. Simulated Test. – Simulated loading conditions or material test as recommended by the manufacturer and approved by the official with statutory authority may be used to properly monitor the system operational performance between official tests, but shall not be used for official certification.

The WWMA recognized that paragraph N.1.2. was intended to apply to tests conducted at intervals between official tests, and was therefore not directed toward weights and measures officials. During the WWMA meeting, one scale customer noted that some scales are not equipped to perform simulated tests. One weights and measures official noted that the original proposal to modify paragraph N.1.2. adds confusion and unnecessary text to the term “official test.” The WWMA also considered a proposal to modify paragraph N.1.1. to require the weights and measures authority to be present during the official test.

The WWMA concluded that it would be more appropriate to address the maintenance testing as a user requirement. User requirements are directed to the device owner/operator and would be a more appropriate place to specify procedures for monitoring the system’s performance between official inspections. Therefore, the WWMA developed an alternate proposal to amend paragraph UR 3.2.(b) as noted in the recommendation above.

The Southern Weights and Measures Association (SWMA) asked the Belt Conveyor Scale Sector to review all proposals which affect belt-conveyor scale systems. The SWMA also recommended that the NCWM Chairman designate funds for the Sector to review Handbook 44 proposals because the Sector’s expertise in belt-conveyor scale system technology is essential when addressing proposals to modify Handbook 44.

During the 2000 NCWM Interim Meeting, a scale operator and railroad representative commented that Handbook 44 requirements should not include maintenance procedures. The Committee recognized that the belt-conveyor scale systems are unique devices; therefore, the Committee felt that it is suitable to list guidelines about appropriate test procedures which help to ensure continued compliance and accurate weightings between official tests. The Committee believed that either simulated load or material tests are acceptable procedures to use in maintaining the scale. The Committee agreed that not only should material tests be recognized as official tests, but it is also appropriate to recognize that means of test for monitoring a system’s performance as part of routine maintenance. The Committee recommended the proposal to modify paragraph UR.3.2.(b) as written for a vote.

321-5 VC UR.3.2. (c) Maintenance; Scale Alignment

(This item was adopted as part of the consent calendar.)

Source: Carryover Item 321-4 (This item originated from the National Type Evaluation Technical Committee Belt Conveyor Scale Sector and first appeared on the Committee’s 1998 Agenda as Item 321-7.)

Recommendation: Modify paragraph UR.3.2. (c) Maintenance as follows:

UR.3.2. Maintenance. Belt-conveyor scales and idlers shall be maintained and serviced in accordance with manufacturer’s instructions and the following:

(c) **Scale Alignment.** – ~~“Wire line” (0.5 mm or 0.02 in diameter piano wire or equivalent nylon line) a~~Alignment checks shall be conducted in accordance with manufacturer’s recommendation when conveyor work is performed in the scale area or in accordance with manufacturer’s recommendation. A material test is required after any realignment.

Discussion: In 1998, the NTETC Belt Conveyor Scales Sector recognized that optimum belt-conveyor scale system performance requires good maintenance practices. Both installation and maintenance should be performed according to the manufacturer’s instructions. Therefore, these procedures may vary depending on the specific system design, operation, and technology. The Sector agreed that there are general and user code sections that adequately address these practices and the scale alignment requirements outlined in paragraph UR3.2.(c). Consequently, the Sector recommended that UR.3.2.(c) be removed from NIST Handbook 44.

In 1998, the Committee considered the recommendation to remove paragraph UR.3.2. (c) Maintenance from the Belt-Conveyor Scale Systems Code. The Committee believed that it is essential to provide scale alignment information to scale manufacturers; however, the methods for determining the alignment should not be restricted to one particular method or technology. Therefore, the Committee made the item informational to allow the Sector time to clarify alternate

means to determine scale alignment. The proposal to remove UR.3.2.(c) remained informational on the 1999 NCWM S&T Agenda.

During the work session of the 1999 Western Weights and Measures Association (WWMA) meeting, one scale manufacturer recommended retaining the paragraph but removing the references to wire line and clarifying that alignment should be based on an as needed basis when it affects scale performance. The WWMA supported this recommendation and modified paragraph UR.3.2.(c) as shown in the proposal below:

- (c) Scale Alignment. - ~~"Wire line" (0.5 mm or 0.02 in diameter piano wire or equivalent nylon line)~~ Alignment checks shall be conducted when conveyor work is performed in the scale area or in accordance with manufacturer's recommendation. A material test is required after any realignment. (Amended 1986 ~~and 200X~~)

The Northeastern Weights and Measures Association (NEWMA) proposed an alternate paragraph which modified the WWMA proposal to place emphasis on alignments in accordance with the manufacturers recommendation as shown in the recommendation section above.

The Southern Weights and Measures Association (SWMA) recommended that this item maintain informational status until the Belt Conveyor Scale Sector develops a proposal which is agreeable to all Sector members. The SWMA also recommended that the NCWM Chairman designate funding for the Sector meeting to review Handbook 44 proposals in addition to NTEP issues because the Sector's expertise in belt-conveyor scale system technology is essential when addressing proposals to modify Handbook 44.

One scale operator indicated that there are safety concerns about eye damage from laser based alignment equipment and drawbacks to nylon and piano wire because the wires stretch or sag. The Committee discussed the proposals and the importance of not restricting alternate methods of determining proper scale alignment. The Committee agreed with the WWMA's alternate recommendation that alignment checks be performed according to the manufacturer's instructions and be followed by a material test.

During the 2000 NCWM Annual Meeting, the Committee reconsidered its position on the WWMA proposal. The Committee agreed that the NEWMA modifications to the WWMA were more appropriate because they permitted alternate methods of performing belt alignment while placing an emphasis on conducting alignment checks according to the manufacturer's instructions. Therefore, the Committee recommended the NEWMA proposal for a vote as shown in the recommendation above:

For additional background information, refer to the 1998 and 1999 S&T Final Reports.

330 Liquid-Measuring Devices

330-1 V S.1.5.3.(a) Width; Indicator Index

(This item was adopted.)

Source: Carryover Item 330-1. (This item originated from the National Type Evaluation Technical Committee Measuring Sector and first appeared on the Committee's 1999 agenda.)

Recommendation: Modify paragraph S.1.5.3. (a) to read as follows:

S.1.5.3. Width.

- (a) **The index of an indicator shall not be wider than the width of the ~~widest~~ narrowest graduation*.**
- (b) **If the index of an indicator extends over the entire length of a graduation, it shall be of uniform width throughout the portion that coincides with the graduation.**
[*Nonretroactive as of January 1, 2002.]

Discussion: NIST Handbook 44 Liquid-Measuring Devices Code paragraph S.1.5.3. (a) requires that the indicator index width be no greater than the width of the *widest* graduation. A similar Measurement Canada requirement requires that the index width be no greater than the width of the *narrowest* graduation. The Measuring Sector felt that the Measurement

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Canada requirement may be more appropriate because it prohibits an indicator index that obscures any scale graduation. In 1998, the Measuring Sector proposed that paragraph S.1.5.3.(a) be modified to correct the discrepancy.

The Committee believed that the proposal should be nonretroactive. The Committee received no unfavorable comments on this item at the 1999 Interim Meeting; therefore, the Committee recommended that this item be adopted as written. The Committee clarified that for arrow-shaped indicators, the narrowest portion at the tip of the arrow could not be wider than the narrowest graduation.

At the 1999 Annual Meeting, the Committee heard comments about the large numbers of analog indicators still in use; however, the Committee noted that the proposal is nonretroactive and would apply only to new devices. Measurement Canada restated its belief that the proposal is a more appropriate design requirement for indicator indices than the one currently in Handbook 44. The Committee also considered comments that the current paragraph S.1.5.3.(a) is more appropriate because a wider index design facilitates reading of the graduation. In contrast, when the index design is narrower than the narrowest graduation, users need to read the indication to the nearest graduation. The Committee acknowledged that there is some validity to this position and decided to make the item informational for additional study and comment. However, the Committee maintained the position that the proposed change is more appropriate and noted that, unless it received more data supporting the existing Handbook 44 language, the Committee would return the proposal to voting status at the 2000 Interim Meeting.

At its Fall 1999 meeting, the Western Weights and Measures Association recommended adopting the proposed changes at the 2000 NCWM Annual Meeting if no data supports current Handbook 44 language.

The Measuring Sector noted during its Fall 1999 meeting that the proposal creates no barriers to Canadian requirements. Manufacturers recognize that they must design devices to meet the Canadian requirements when seeking both U.S. and Canadian approval. The Sector recommended hearing all arguments on this issue before the S&T Committee decided on the item's status.

The Northeastern Weights and Measures Association (NEWMA) changed its position on the item from supporting the proposal for a vote to recommending that it become an information item. NEWMA took this position while it awaits industry's input about the effects of the proposal on other liquid-measuring devices. The NEWMA noted the proposal might be appropriate in the revised Handbook 44 (see Item 360-1) Liquid-Measuring Devices Code.

The Southern Weight and Measures Association agreed that the current Handbook 44 requirement could be applied during NTEP Mutual Recognition type evaluation without conflict with the Canadian requirement. Consequently, it opposed the proposal and recommended withdrawing it from the Committee's agenda.

During the 2000 NCWM Interim Meeting, the Committee again heard from one NCWM member who stated that the current Handbook requirement is correct because the variances in graduation sizes facilitate reading the indications and clearly illustrate subordinate graduations. That member also noted that wider indications eliminate any question about the indication starting at zero and lessen the parallax effect. That member also pointed out that, over the past 40 years, no problems existed for reading fan and dial scales. The Committee was cautioned that if the proposal is added to Handbook 44, some devices with analog indications still in production may not meet the proposed requirements.

The Committee acknowledged that the proposal was developed attempting to align U.S. and Canadian requirements. The Committee recognized that a limited number of manufacturers might be affected by the proposal; however, this group has not commented. The Committee appreciates the input, but it did not receive sufficient specific technical data to warrant maintaining the current Handbook 44 requirement. Moreover, the proposed change is nonretroactive which should allow companies adequate time to comply. Since the Committee does not believe that the proposal would affect analog retail motor-fuel dispensers in production, the Committee recommended this item for a vote.

At its Spring 2000 Annual Meeting, the Central Weights and Measures Association (CWMA) noted that when the indicator index extends along the entire length of a graduation that portion of the index that may be brought into coincidence with the graduation shall be of the same width throughout the length of the index. The proposal for an indicator index not narrower than the narrowest graduation conflicts with the CWMA position. Therefore, CWMA recommended the proposal be returned to informational status.

The Committee deliberated at length on this issue and believed that it has not heard a technical reason to keep the current Handbook 44 requirement. The Committee agreed that when reading subordinate indications, it is important that they not be obscured by the indicator index. The Committee acknowledged that the following Liquid-Measuring Devices Codes contain similar requirements which might conflict with the proposal if those meters are used in multiple applications:

- 3.31 Vehicle-Tank Meters Code paragraph S.1.3.3.(a) Width
- 3.32 Liquefied Petroleum Gas and Anhydrous Ammonia Liquid-Measuring Devices Code paragraph S.1.3.3.(a) Width
- 3.33 Hydrocarbon Gas Vapor-Measuring Devices Code paragraph S.1.3.3.(a) Width
- 3.34 Cryogenic Liquid-Measuring Devices Code paragraph S.1.3.3.(a) Width
- 3.35 Milk Meters Code paragraph S.1.3.3.(a) Width
- 3.36 Water Meters Code paragraph S.1.3.3.(a) Width
- 3.38 Carbon Dioxide Liquid-Measuring Devices Tentative Code paragraph S.1.3.3.(a) Width

The Committee plans to revisit each code in this list and make comparisons with corresponding Canadian and OIML requirements. The Committee is also interested in the effect of making similar changes to those other liquid-measuring device codes.

The Committee would like to see all devices comply immediately; however, it realizes that this is not practical. The Committee notes that the current language applies until January 1, 2002. Therefore, devices manufactured before 2002 or that are either new or used and placed into commercial service before 2002 comply if their indicator index is not wider than the widest graduation. The Committee does not plan to retain the old Handbook 44 language addressing indices not wider than the widest graduation. The Committee notes that devices in service prior to 2002 that comply with the latest requirement by having an indicator index that is not wider than the narrowest graduation also meet the intent of the requirement.

330-2 I Appendix D, Definition for Retail Device and Tolerances, Table T.X Accuracy Classes for Liquid Measuring Devices

Source: Carryover Item 330-5. (This item originated from the Western Weights and Measures Association (WWMA) and first appeared on the Committee’s 1999 agenda.)

Discussion: Weights and measures officials and the service industry from a WWMA jurisdiction encountered difficulty determining which tolerances to apply to aircraft and marina refueling dispensers used for deliveries ranging from 5 gallons to 300 gallons. The jurisdiction was uncertain whether to categorize these dispensers as retail or wholesale devices.

During the 1999 NCWM Interim Meeting, the Committee examined a proposal to modify the definition of “retail device.” The Committee recognized that modifying the definition of “retail device” or establishing new tolerances may impact other device technologies used in similar applications. The Committee also discussed the theory of tolerances and the differences in tolerances for retail and wholesale devices. The Committee believed that an alternate approach to modifying or eliminating the definition of “retail device” was to establish tolerances that are not based on retail or wholesale use. The Committee developed a proposal for a new table of tolerances for meters based on the test draft size. At the 1999 NCWM Annual Meeting, the Committee decided both proposals needed further development and asked for more input from the WWMA.

During the 2000 NCWM Interim Meeting, the Committee reviewed the CWMA’s proposed modified definition of “retail device” and the Northeastern Weights and Measures Association’s alternate proposal for a new table of tolerances based on meter accuracy classes.

The Committee considered the following proposal modifying the definition of retail devices:

- retail device. A liquid measuring device primarily used for non-resale use.**
- ~~single deliveries of less than 378 L (100 gal),~~**
- ~~retail deliveries of motor fuels to individual highway vehicles, or~~**
- ~~single deliveries of liquefied petroleum gas for domestic use and liquefied petroleum gas or liquefied anhydrous ammonia for nonresale use.~~**
- (Amended 1987 and 200X) [3.32]**

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The Committee also considered a Northeastern Weights and Measures Association (NEWMA) proposal to add a new table of tolerances to the Liquid-Measuring Devices Code.

The Committee held lengthy discussion concerning the proposal’s intent. One retail motor-fuel dispenser manufacturer noted the term “primarily” does not clearly define the amount of use in non-resale applications that qualifies a device as “retail.” The manufacturer also questioned whether the purpose of the proposal is to change Handbook 44 definitions or tolerances. The manufacturer also objected to tolerances based on prover size. The objection was noted because the same device will be subject to different tolerances based on the test draft rather than the flow rate. However, several Committee members indicated that existing devices are capable of meeting the proposed new tolerances.

The Committee recognized that additional work must be completed to determine how the proposal affects the definition of “retail” in other code sections and other sections of Section 3.30, such as paragraph S.2.5, which specifies requirements for a zero-set-back interlock for retail motor-fuel dispensers. One Committee member noted that the NEWMA table does not clarify if meters must be marked or deliver at a rate of 100 LPM to classify as an Accuracy Class 0.3 device.

The Committee modified the table of meter accuracy class tolerances proposed by NEWMA to clarify the specific temperatures for heated products at 50 °C and redefined tolerances for gases based on meter registration as shown below. The Committee agreed that the modified table and CWMA’s shortened definition of “retail device” have merit, but they warranted further discussion. Therefore, the Committee gave these proposals informational status.

Table T.X Accuracy Classes for Liquid Measuring Devices				
Accuracy Class	Application	Acceptance Tolerance	Maintenance Tolerance	Special Test Tolerance*
0.3	<u>Petroleum products including large capacity motor fuel devices (flow rates over 100 LPM (25 GPM)), heated products at or greater than 50 °C asphalt at or below temperatures 50 °C, all other liquids not shown where the typical delivery is over 200 L (50 gal)</u>	<u>0.2 %</u>	<u>0.3 %</u>	<u>0.5 %</u>
03A	<u>Asphalt at temperatures greater than 50 °C</u>	<u>0.3 %</u>	<u>0.3 %</u>	<u>0.5 %</u>
0.5	<u>Petroleum products delivered from small capacity (retail) motor-fuel devices, agri-chemical liquids, and all other applications not shown.</u>	<u>0.3 %</u>	<u>0.5 %</u>	<u>0.5%</u>
1.0	<u>Anhydrous ammonia, LP gas (including vehicle tank meters)</u>	<u>0.6 %</u>	<u>1.0 %</u>	<u>1.0 %</u>
1.1	<u>Petroleum products and other normal liquids from devices with flow rates less than 1 gpm</u>	<u>0.75 %</u>	<u>1.0 %</u>	<u>1.25%</u>
1.5	<u>Water</u>	<u>1.5 %</u>	<u>1.5 %</u>	<u>+5.0 % - 1.5 %</u>
2.0	<u>Compressed natural gas as a motor fuel</u>	<u>1.5 %</u>	<u>2.0 %</u>	<u>2.0 %</u>
2.5	<u>Cryogenic products: liquefied compressed gases other than LP gas</u>	<u>1.5 %</u>	<u>2.5 %</u>	<u>2.5 %</u>
3.0	<u>Gases at low pressure (LP vapor)</u>	<u>Overregistration</u>	<u>1.5 %</u>	<u>1.5 %</u>
		<u>Underregistration</u>	<u>3.0%</u>	<u>3.0%</u>

*where applicable

The NEWMA recommended that the issue remain an information item, but suggested defining the term “liquid-measuring.” One jurisdiction indicated suitability of the device for a particular application is a larger issue because wholesale devices may be used for deliveries less than one gallon.

At the 2000 NCWM Annual Meeting, the Committee initially considered splitting this item into two separate issues, (1) a definition and (2) a table of tolerances, to facilitate the review process. One jurisdiction recommended that the Committee work to establish a minimum delivery amount rather than revise the definitions of retail and wholesale. The Committee understands that questions remain about the ability of high volume retail meters to meet the proposed tighter

tolerances. The Committee plans to contact the regional and several industry associations about collecting data to demonstrate the performance of the meters in question at tolerances more stringent than those currently specified in Handbook 44.

For more background information, refer to the 1999 S&T Final Report.

331 Vehicle-Tank Meters

331-1 I Recognition of Temperature Compensation

Source: Western Weights and Measures Association (WWMA)

Discussion: During the 2000 Interim Meeting, the Committee discussed a WWMA proposal to modify the Vehicle-Tank Meters Code to recognize Automatic Temperature Compensation (ATC). The Committee noted that the proposal does not address new technology which is capable of indicating in both the net and gross mode. Therefore, the Committee developed new paragraph S.2.4.2.X. Gross and Net Indications and added it to the WWMA proposal. The Committee agreed that paragraph UR.2.5.1.2. Invoices was established for wholesale meter application. Consequently, the Committee also removed paragraphs UR.2.5.1.2.(b) Invoices and UR.2.5.2. Nonautomatic from the proposal. The modified proposal reads as follows:

S.2.4. Automatic Temperature Compensation.

S.2.4.1. Automatic Temperature Compensation. - A device may be equipped with an automatic means for adjusting the indication and registration of the measured volume of product to the volume at 15 °C (60 °F).

S.2.4.2. Provision for Deactivating. - On a device equipped with an automatic temperature-compensating mechanism that will indicate or record only in terms of liters (gallons) compensated to 15 °C (60 °F), provision shall be made for deactivating the automatic temperature-compensating mechanism so that the meter can indicate, and record if it is equipped to record, in terms of the uncompensated volume.

S.2.4.2.X. Gross and Net Indications – A device equipped with automatic temperature compensation shall indicate and record, if equipped to record, both the gross (uncompensated) and net (compensated) volume for testing purposes. If both values cannot be displayed or recorded for the same test draft, means shall be provided to select either the gross or net indication for each test draft.

S.2.4.3. Provision for Sealing Automatic Temperature Compensating Systems. - Provision shall be made for applying security seals in such a manner that an automatic temperature-compensating system cannot be disconnected and that no adjustment may be made to the system without breaking the seal.

S.2.4.4. Temperature Determination with Automatic Temperature Compensation. - 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) immediately adjacent to the meter in the meter inlet or discharge line.

S.5.6. Temperature Compensation. - If a device is equipped with an automatic temperature compensator, the primary indicating elements, recording elements, and recording representation shall be clearly and conspicuously marked to show that the volume delivered has been adjusted to the volume at 15 °C (60 °F).

N.4.1.2. Automatic Temperature Compensating Systems. - On devices equipped with automatic temperature compensating systems, normal tests shall be conducted;

(a) by comparing the compensated volume indicated or recorded to the actual delivered

volume corrected to 15 °C (60 °F); and

- (b) with the temperature compensating system deactivated, comparing the uncompensated volume indicated or recorded to the actual delivered volume.

The first test shall be performed with the automatic temperature-compensating system operating in the "as found" condition. On devices that indicate or record both the compensated and uncompensated volume for each delivery, the tests in (a) and (b) may be performed as a single test.

N.5. Temperature Correction. - 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 time of volumetric determination in the prover. When adjustments are necessary, appropriate petroleum measurement tables should be used.

T.2.1. Automatic Temperature Compensating Systems. - The difference between the meter error (expressed as a percentage) for results determined with and without the automatic temperature compensating system activated shall not exceed:

- (a) 0.2 percent for mechanical automatic temperature compensating systems; and

- (b) 0.1 percent for electronic automatic temperature compensating systems.

The delivered quantities for each test shall be approximately the same size. The results of each test shall be within the applicable acceptance or maintenance tolerance.

UR.2.5. Temperature Compensation.

UR.2.5.1. Automatic.

UR.2.5.1.1. When to be Used. - If a device is equipped with an automatic temperature compensator, it shall be connected, operable, and in use at all times. An electronic or mechanical automatic temperature compensating system may not be removed, nor may a compensated device be replaced with an uncompensated device, without the written approval of the responsible weights and measures jurisdiction.

[Note: This requirement does not specify the method of sale for product measured through a meter.]

UR.2.5.1.2. Invoices.

- (a) An written invoice based on a reading of a device that is equipped with an automatic temperature compensator shall show that the volume delivered has been adjusted to the volume at 15 °C (60 °F).

- (b) The invoice issued from an electronic device equipped with an automatic temperature compensating system shall also indicate: (1) the API gravity, specific gravity, or coefficient of expansion for the product; (2) product temperature; and (3) gross reading.

UR.2.5.2. Nonautomatic.

UR.2.5.2.1. Temperature Determination. - If the volume of the product delivered is adjusted to the volume at 15 °C (60 °F), the product temperature shall be taken during the delivery in:

- (a) the liquid chamber of the meter, or
(b) the meter inlet or discharge line adjacent to the meter, or
(c) the compartment of the receiving receptacle (e.g., storage tank) at the time it is loaded.

~~UR.2.5.2.2. Invoices. The accompanying invoice shall indicate that the volume of the product has been adjusted for temperature variations to a volume at 15 °C (60 °F) and shall also state the product temperature used in making the adjustment.~~

Weights and measures officials expressed confusion about the specific meter applications covered on Certificates of Conformance which list the temperature compensation feature option. The WWMA acknowledged that some jurisdictions permit temperature compensated deliveries in meter applications for which ATC is not addressed in NIST Handbook 44. These jurisdictions may be applying paragraph G-A.3. Special and Unclassified Equipment to these devices and applying specifications and tolerances from other codes based on the equipment's design, intended purpose, and conditions of use. Jurisdictions that do allow ATC do not allow the selective use of the temperature compensation feature and require that the feature be operable at all points in the distribution cycle.

The WWMA agreed that the proposed requirements should immediately apply to existing devices equipped with ATC. The WWMA modified the text in paragraph UR.2.5.1.2. to reflect their position that handwritten receipts are permitted. The WWMA believes that initially it is appropriate to add the proposed ATC requirements to the Vehicle-Tank Meter Code Section because it is the most equitable means of delivery for temperature compensated vehicle tank metering systems already operating in the marketplace.

WWMA noted the importance of requiring that the temperature compensation feature be activated year-round. Although the proposal addressed device requirements, WWMA recommends that to fully address the temperature compensation issue, it is necessary to consider other related laws and regulations such as the method of sale. The WWMA supported moving this item forward for a vote.

The Measuring Sector plans to observe the development of this issue. The Sector is interested in Canada's voluntary temperature compensation program. Canada's program has operated for almost 20 years, yet there is not 100 percent industry participation. The Sector was concerned about the proper use of correction tables when calculating deliveries. The Sector also believed that it is necessary to educate consumers about the temperature compensated method of sale.

The Central Weights and Measures Association (CWMA) noted that some jurisdictions may have statutes that would be affected by the adoption of the proposal. CWMA would also like to hear more details about the operation of Canada's voluntary temperature compensation program to assist in its review of this issue.

The Northeastern Weights and Measures Association (NEWMA) agreed that advancing technology has made the implementation of temperature compensation features much more cost effective. NEWMA proposes that automatic temperature compensation (ATC) also be recognized for retail devices in the Liquid-Measuring Device Code Section of Handbook 44.

NEWMA also noted that if the U.S. allows automatic temperature compensation then NIST Handbook 130, Method of Sale should address it as a requirement for year-round deliveries. NEWMA forwarded a proposal to the Laws and Regulations Committee recommending temperature compensation for petroleum products sales (Agenda Item 232-5). Many NEWMA participants were concerned that companies would use the ATC units to their advantage in the colder months of the year and use equipment or delivery trucks with no ATC during the warmer months. Consequently, NEWMA recommended that a user requirement be included in Handbook 44 to require a company to activate the ATC feature or equip all vehicles in the company's fleet with ATC, and that the feature be activated year-round. NEWMA supported this issue as an informational item because it has merit; however, the proposal needs a thorough review to ensure that essential related requirements are not overlooked.

NEWMA recommended that Section S.2.4.2. Provision for Deactivating be rewritten to address technology in today's marketplace. NEWMA noted that today's technology can be equipped to indicate and record in gross and net volume sales. The current wording of the title could be changed to "Gross and Net Volume Indications" reflecting available technology and eliminating the ability to deactivate the system. Temperature compensated requirements were written when mechanical ATC units predominated technology in the marketplace. Current codes in Handbook 44; 3.30 Liquid-Measuring Devices, paragraph S.2.7.2; 3.32 LPG and Anhydrous Ammonia Liquid-Measuring Devices paragraph S.2.6.1. also contain ATC requirements that should be modified to address the latest technology. NEWMA questioned the need to educate consumers to make value comparisons and to fully understand that deliveries are compensated to 60 °F. NEWMA is not certain it is necessary for consumers to understand terms such as "API Gravity," "Specific Gravity," and "Coefficient of Expansion" and how they affect product delivery.

At the 2000 NCWM Interim Meeting, the Committee discussed issues that might affect enforcement and the applications covered by the proposal. Several Committee members noted the jurisdictions ultimately decide whether to address

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special issues by promulgating state or local requirements in conjunction with Handbook 44 requirements or to enforce only requirements that are listed in Handbook 44. There are also jurisdictions where other laws/regulations specifically defining the value of a gallon may conflict with the proposal. These jurisdictional policy differences affect the uniform enforcement of the proposed requirement.

The Committee acknowledged that there is a corresponding proposal on the Laws and Regulations (L&R) Committee Agenda (Item 232-5); however, no specific language was forwarded to the L&R Committee. The Handbook 130 proposal only addresses petroleum product applications when product is metered through vehicle-tank meters and other liquid-measuring devices.

During the 2000 NCWM open session, one retail motor-fuel dispenser manufacturer asked for a review of Canadian procedures before creating new U.S. policies and procedures related to temperature compensation. One meter manufacturer noted that while temperature compensation technology is less expensive than 15 years ago, any requirements which would impose a significant change or create a substantial burden should be carefully considered.

The Committee agreed that because of the temperature effects, temperature-compensated metering is more equitable when deliveries are from above ground storage tanks. The Committee acknowledged that a decade ago technology to provide temperature compensated deliveries was available; however, compensation at all distribution levels is the most equitable use of the technology. The Committee believes that the latest version of the proposal should receive a thorough review to ensure that all applications are addressed. The Committee has heard comments that the proposal should be a retroactive requirement, therefore it encourages industry and weights and measures officials input on the proposal. Because the proposal has a far-reaching effect on industry and enforcement procedures, the Committee made this item informational while it waits for feedback and studies Canada's ATC program.

The Committee recognized that work must first be completed in both NIST Handbook 130 and Handbook 44 to properly address the method of sale and device requirements for temperature compensated deliveries. Although the Committee is addressing the Vehicle-Tank Meters Code, other device areas of Handbook 44 will require work to address temperature compensated deliveries.

The Committee recognized that there is growing interest in this issue because of recent inquiries received by the NIST Office of Weights and Measures from Australia and Puerto Rico asking about the issue of temperature compensation in the United States. Additionally, during the 2000 NCWM Annual Meeting the Metrology Subcommittee's indicated that there is greater technical accuracy in the measurement of petroleum products using temperature compensation. The Subcommittee also cited the beneficial affects on environmental concerns about tracking product leakage and better accounting of tax revenues when there are improvements in the measurement process. However, the Subcommittee is uncertain if there is a viable means to implement temperature compensation.

The Petroleum Marketers Association of America (PMAA) opposes temperature compensation for vehicle-tank meters because it believes that (1) compensation results in only a slight increase in measurement accuracy, (2) the plus and minus delivery errors negate each other, (3) compensation raises the capital cost for businesses, (4) less home heating fuel is delivered, and (5) complaints will increase because indicated delivery will be greater than the volume marked on containers such as fuel storage tanks.

The Committee reiterates its concerns about (1) educating the public, (2) the economic effects to fully implementing this practice, and (3) the importance of equity at all levels in the marketplace. Questions remain about whether or not the proposal is intended to address all products or only petroleum products. Comments to the Committee indicate that the increased use of electronic devices which are equipped with features such as ATC may drive this proposal. The Committee recognizes that all industry sectors and the weights and measures community must make a concentrated effort to start the groundwork on this issue. The Committee is keeping this item informational while it contacts the L&R Committee about how to proceed and reworks several requirements that may not adequately address vehicle tank meter applications. The Committee also asked that NIST Office of Weights and Measures, industry, weights and measures jurisdictions, and other interested parties to consider undertaking a technical review and/or study of automatic temperature compensation in the marketplace.

334 Cryogenic Liquid-Measuring Devices

334-1 I Recognition of Liquefied Natural Gas Application

Source: Carryover Item 334-1. (This item originated from the Southern Weights and Measures Association (SWMA) and first appeared on the Committee's 1999 agenda.)

Discussion: The Committee reviewed the following proposal changing the Cryogenic Liquid-Measuring Devices Code to recognize Liquefied Natural Gas (LNG) applications.

Amend paragraphs A.2. (c) and (d) as follows:

A.2. - This code does not apply to the following:

- (a) **Devices used for dispensing liquefied petroleum gases (for which see Sec. 3.32; Code for Liquefied Petroleum Gas and Anhydrous Ammonia Liquid-Measuring Devices).**
- (b) **Devices used solely for dispensing a product in connection with operations in which the amount dispensed does not affect customer charges.**
- (c) **Devices used solely for dispensing liquefied natural gas.**
- (d) **mass flow meters (see Sec. 3.37, Code for Mass Flow Meters)**

S.2.5. Provision for Sealing. - Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or physically applying security seals in such a manner that no adjustment ~~or interchange~~ may be made of:

- (a) any measurement element;
- (b) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries; ~~and or~~
- (c) ~~any automatic temperature or density-compensating system~~ the zero adjustment mechanism.

Any When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

Audit trails shall use the format set forth in Table S.2.5.

Add the following paragraphs to correspond to the Mass Flow Meters Code:

S.2.4. Provisions for Power Loss.

S.2.4.1. Transaction Information. - In the event of a power loss, the information needed to complete any transaction in progress at the time of the power loss (such as the quantity and unit price, or sales price) shall be determinable for at least 15 minutes at the dispenser or at the console if the console is accessible to the customer.

S.2.4.2. User Information. - The device memory shall retain information on the quantity of fuel dispensed and the sales price totals during power loss.

S.2.6.2. Display of Quantity and Total Price. - When a delivery is completed, the total price and quantity for that transaction shall be displayed on the face of the dispenser for at least 5 minutes or until the next transaction is initiated by using controls on the device or other user-activated controls.

S.2.7. Recorded Representations, Point of Sale Systems. - The sales information recorded by cash registers when interfaced with a retail motor-fuel dispenser shall contain the following information for products delivered by the dispenser:

- (a) the total volume of the delivery,
- (b) the unit price.

- (c) **the total computed price, and**
- (d) **the product identity by name, symbol, abbreviation, or code number.**
[Nonretroactive as of January 1, XXXX.]

S.2.8. Indication of Delivery. - The device shall automatically show on its face the initial zero condition and the quantity delivered (up to the nominal capacity).

However, the first 0.03 L (0.009 gal) of a delivery and its associated total sales price need not be indicated.
[Nonretroactive as of January 1, XXXX.]

Add new paragraphs S.1.1.2.X and S.1.X. and Table T.1. as follows:

S.1.1.2.X. Liquefied Natural Gas Used as an Engine Fuel - When liquefied natural gas is dispensed as an engine fuel, the delivered quantity shall be indicated and recorded, if the device is equipped to record, in liters or gallons and decimal subdivisions or fractional equivalents thereof.

S.1.X. Liquefied Natural Gas Dispensers. - Except for fleet sales and other price contract sales, a liquefied natural gas dispenser used to refuel vehicles shall be of the computing type and shall indicate the quantity, the unit price, and the total price of each delivery. The dispenser shall display the volume measured for each transaction either continuously on an external or internal display accessible during the inspection and test of the dispenser, or display the quantity in volume units by using controls on the device.

Table T.1. Accuracy Classes for Cryogenic Meter Applications			
<u>Accuracy Class</u>	<u>Application</u>	<u>Acceptance Tolerance</u>	<u>Maintenance Tolerance</u>
<u>2.0</u>	<u>Liquefied natural gas as a motor fuel</u>	<u>1.5%</u>	<u>2.0%</u>
<u>2.5</u>	<u>Bulk delivery of cryogenic liquids</u>	<u>1.5%</u>	<u>2.5%</u>

Discussion: In 1998, the SWMA reviewed a proposal to include liquefied natural gas (LNG) applications in the Cryogenic Liquid-Measuring Devices Code. The SWMA believed the proposal had merit but warranted further development. SWMA heard comments from Hoffer Flow Controls, Inc., which believed that LNG may have been excluded from the Cryogenic Code because of questions regarding LNG’s composition. Hoffer noted that liquid densities have far less variation than gas densities even when methane content differs. Hoffer also believed the measuring device codes are nonuniform and stated that cryogenic meters are held to more stringent standards. Hoffer noted that no current retail dispensers are capable of determining a product’s composition.

The Meter Manufacturers Association believes that LNG is a cryogenic fluid based on Handbook 44 and 130 definitions, and there are no technical reasons to exclude LNG from the code.

One NTEP laboratory indicated concern that paragraph S.2.4. Automatic Temperature or Density Compensation may not include all of the parameters for which compensation must be made when metering an impure product such as LNG. The mass units were removed from the Cryogenic Code after the NCWM adopted the Mass Flow Meter Code. Consequently, the Committee questioned a Hoffer Flow Controls representative about the appropriate unit of measurement since the code has no mass units and industry has no plans to ask for a volume conversion unit such as the gasoline gallon equivalent.

NIST OWM noted that earlier studies conducted by NIST’s Boulder facility demonstrated inaccuracies in turbine meter registration that seem to be a result of internal components freezing up. OWM also questioned whether or not proposed paragraph S.1.X. intends for indications to be part of an external or internal display since the official does not need to determine if the dispenser is programmed with the correct mass to volume conversion factor.

In 1999, the NCWM S&T Committee considered comments and concluded that there was insufficient data to demonstrate that all types of meters currently used to measure cryogenics can accurately measure LNG. The Committee also wanted

to ensure that the codes are kept uniform and that recognizing LNG metering in Handbook 44 is not restricted to a single technology. The Committee gave this item developing status to allow more time to study these issues.

During the 1999 NCWM Annual Meeting, the Committee noted that it was waiting for data from the California NTEP Participating Laboratory, which will provide information about product conversion tables. Hoffer Flow Controls, Inc., noted that the Society of Automotive Engineers (SAE) is gathering data about metering products of various composition.

During the 1999 Western Weights and Measures Association (WWMA) Technical Conference, no comments were received on this issue. WWMA recommended that this item remain informational until additional data is available supporting recognition of liquefied natural gas applications in the Cryogenics Code.

The SWMA recommended this item be withdrawn from the S&T Agenda if no data is received at the 2000 NCWM Interim Meeting.

The Northeastern Weights and Measures Association recommended that this issue remain as an informational item until current data from California NTEP Participating Laboratory is received and verified.

During the 2000 Interim Meeting, the Committee again reviewed the proposal. The Committee had not received any data on the performance of meters when used to deliver LNG. Jeff Kelly (Hoffer Flow Controls, Inc.) updated the Committee on the SAE Committee's Liquefied Natural Gas Vehicular Metering and Measuring Task Force formed to review LNG composition, metering, connections, and planning to begin testing in 2000 at locations in Colorado, California, and Idaho. SAE plans controlled test to examine measurement accuracy of several meter types delivering three LNG samples with various methane content. Mr. Kelly agreed to provide the Committee with a synopsis of the SAE LNG Vehicular Metering and Measuring Task Force Meeting held August 26, 1999. The Committee recommended that this item remain informational pending the results of the ongoing SAE study on LNG applications.

The Committee encourages feedback on all work that demonstrates the performance of meter technology, which complies with NIST Handbook 44 Cryogenics Liquid-Measuring Devices Code requirements, in the accurate measurement of LNG products. Hoffer Flow Controls indicated they will provide the Committee with a report on the SAE study in October 2000. Consequently, the Committee agreed the item remain an information item.

354 Taximeters Code

354-1 VC S.1.10. Non-Fare Information

(This item was adopted as part of the consent calendar.)

Source: Carryover Item 354-2. (This item originated from the Northeastern Weights and Measures Association (NEWMA) and first appeared on the Committee's 1999 agenda.)

Recommendation: Add the following new paragraph S.1.10. Non-fare Information to the Taximeter Code:

S.1.10. Non-fare Information. - The fare and extras displays may be used to display auxiliary information provided the meter is in the vacant condition and such information is only displayed for ten seconds, or less. If the information consists of a list of information, the list may be displayed one item after another, provided that each item is displayed for ten seconds, or less. [Nonretroactive as of January 1, 2002.]

Discussion: In 1998, NTEP Participating Laboratories received requests to evaluate taximeters that are equipped with indicators which are capable of using the fare and extra displays to indicate other non-fare information. Numerous special and optional features, such as a clock or recall of vehicle/transaction statistical information (stats), are incorporated into the design of newer electronic taximeters. There is concern that customers may be confused about which values represent the fares and extras. To avoid confusion about the displayed values, NEWMA proposed a new paragraph S.1.10. which would limit the display of special feature information to: (1) 5 seconds or less, and (2) only when the taximeter is cleared (not registering or vacant). For taximeters which are capable of displaying vehicle or transaction stats, the instrument would be permitted to scroll through the statistics; however, the display of each stat would be limited to 5 seconds.

The Southern Weights and Measures Association believed that this proposal had merit; however, the proposed changes to the Taximeter Code need to be reviewed for clarity by the taximeter manufacturers and Participating NTEP Laboratories.

During the 1999 Interim Meeting, the Committee heard questions about whether or not it is necessary for the meter to be in the vacant mode when displaying non-fare information. NEWMA representatives indicated concern that the next customer who enters the vehicle may assume that the non-fare information represents some part of his or her transaction. Industry representatives indicated that the originally proposed 5-second length of time is too short to record or tabulate displayed information. Consequently, the Committee made this an informational item to allow additional study on what constituted a reasonable time limit.

During the 1999 Annual Meeting, the Committee agreed that when a taximeter is not in use, auxiliary information may be displayed. The Committee heard comments that the originally proposed 5-second time limit is not sufficient to view information. The Committee asked that interested parties and members of the taxi industry provide input on alternative time limits.

During the 1999 Western Weights and Measures Association (WWMA) Technical Conference, no comments were received on this issue. The WWMA recommended that this item remain informational until weights and measures jurisdictions and industry representatives provide additional data about the effects of the proposal.

In 1999, NEWMA recommended an alternate proposal for a new paragraph S.1.10 which would allow a taximeter a time period of 10 seconds to display auxiliary information for a vote at the 2000 NCWM Annual Meeting.

During the 2000 NCWM Interim Meeting, the Committee took the position that the average consumer is unfamiliar with the complexities of taximeters indications and limits are needed on the length of time nonfare information is displayed. The Committee agreed with NEWMA's recommendation for a maximum of 10-second display time for non-fare information and believes that this is a reasonable alternative to the original proposal of a 5-second time limit and industry's recommendation of 15 seconds. Therefore, the Committee recommended the proposal for a vote.

354-2 VC S.5. Provisions for Security

(This item was adopted as part of the consent calendar.)

Source: Carryover Item 354-4. (This item originated from the Northeastern Weights and Measures Association (NEWMA) and first appeared on the Committee's 1999 agenda.)

Recommendation: Modify paragraph S.5. Provisions for Security Seals as follows:

S.5. Provision for Security Seals. - Adequate provision shall be made ~~for affixing to provide security seals to~~ for a taximeter. Security may be provided either by:

(a) Affixing security seals to the taximeter and to all other parts components required for service operation of a complete installation on a vehicle, so that no adjustments, alterations, or replacements affecting accuracy or indications of the device or the assembly can be made without mutilating the seal or seals; or

(b) Using a combination of security seals described in paragraph (a), and, in the case of a component that may be removed from a vehicle (e.g., slide mounting the taximeter), providing a physical or electronic link between components affecting accuracy or indications of the device to ensure that its performance is not affected and operation is only permitted with those components having the same unique properties.

The sealing means shall be such that it is not necessary to disassemble or remove any part of the device or of the vehicle to apply or inspect the seals.

(Amended 1988 and 200X)

Discussion: In 1998, the Committee discussed a NEWMA proposal to modify paragraph S.5. Provision for Security Seals to address security for measuring elements that are removable from the vehicle.

NEWMA noted that many taximeters are mounted on a slide bracket that permits easy removal of the meter for safe overnight storage. This type of mount conflicts with the requirements in paragraph S.5. Provisions for Security Seals. The "slide-mount" installation also allows taximeters to be installed in vehicles other than the vehicle where it was calibrated. The desire to provide taximeters with anti-theft features is understandable; however, such a feature should not affect the integrity of the measurement process. Therefore, it was recommended that S.5. be modified to recognize that

either: (1) a taximeter be permanently attached to a vehicle using a physical security seal; or (2) the taximeter component may be removable, but an electronic seal be provided that permits operation with only one specific vehicle or bracket. NEWMA recommended that this proposal be a retroactive requirement applying to all taximeters and, if there are no unfavorable comments, that it become a voting item at the 2000 NCWM Annual Meeting.

The International Taxicab and Livery Association (ITLA) opposed the proposal because it believed that interchanging taximeters as the chosen method to perpetuate fraud is unlikely. ITLA reported that two manufacturers believe that complying with the proposal will require costly technical support. Based on these comments and allowing for additional input on these issues, the Committee made this an informational item on its 1998 agenda.

During the 2000 Interim Meeting, the Committee noted that current Handbook 44 language requires removable taximeters to be sealed. The NEWMA proposal clarifies acceptable means for securing those devices.

The Committee discussed the NEWMA proposal to modify paragraph S.5. Provision for Security Seals to address security for measuring elements that are removable from the vehicle. The Committee recognized that NEWMA's proposal requires an electronic security link for removable taximeters. This ensures that these devices are reinstalled to NIST Handbook 44 requirements. The Committee believed that technology is available to create electronic links between device components. There are also concerns about how the electronic link is programmed and if the next generation of taximeters will be capable of other electronic functions, such as remote communication of sealable parameters. Additionally, there was concern about what constitutes, or how to define, an "electronic link."

After the 2000 NCWM Interim Meeting, the Committee reviewed paragraph Provision for Sealing Electronic Adjustable Components in Handbook 44, which addresses security for electronic components. The Committee agreed that there are no specific audit trail requirements in the Taximeter Code, although Handbook 44 recognizes audit trails in G-S.8. and in other code sections, such as the Scales and Liquid Measuring Devices Code.

Programmable devices that recognize specific codes and interface only with select components have the capability of communicating remotely; they represent an additional form of security that prevents the use of meters when not calibrated to a vehicle. The Committee was uncertain exactly how these features function in taximeters; however, the Committee believed it was important to appropriately address new technology and forms of device security.

The Committee initially agreed that the NEWMA proposal should be modified to become effective January 1, 2002 and to recognize electronic means of security such as audit trails. Consequently, the Committee recommended the following modified proposal for a vote in its 2000 Interim S&T Committee Report (Publication 16).

S.5. Provision for Security Seals. - Adequate provision shall be made for ~~affixing to provide~~ providing security seals to for a taximeter. Security may be provided either by:

(a) Affixing security seals or other approved means of security (e.g., audit trails) to the taximeter and to all other parts components required for service operation of a complete installation on a vehicle, so that no adjustments, alterations, or replacements affecting accuracy or indications of the device or the assembly can be made without mutilating the seal or seals; or

(b) Using a combination of security seals described in paragraph (a), and, in the case of a component that may be removed from a vehicle (e.g., slide mounting the taximeter), providing a physical or electronic link between components affecting accuracy or indications of the device to ensure that its performance is not affected and operation is only permitted with those components having the same unique properties.

The sealing means shall be such that it is not necessary to disassemble or remove any part of the device or of the vehicle to apply or inspect the seals.
(Amended 1988 and 200X)

During a June 2000 meeting sponsored by the New York Taxi and Limousine Commission, representatives from industry and government discussed possible sources for electronic security links.

During the NCWM 2000 Annual Meeting, the Committee received comments from the weights and measures jurisdiction which developed the original proposal that it opposed addressing audit trail requirements in the proposal. The jurisdiction indicated that it holds taxi owners responsible when a security seal is broken. The jurisdiction noted that taxis are leased and out of the owner's control for extended periods of time. A heavy duty physical security seal used as a deterrent in

that jurisdiction works to deter fraudulent use of the meter; however, no additional security guidelines are available to determine who initiated fraudulent activity when evidence of fraudulent activity is electronically detected.

NEWMA representatives recommended that because of the complexities of taximeter features and rate structures, any language to address audit trails in the Taximeter Code should be thoroughly discussed and developed before amending Handbook 44. The Committee agreed with the NEWMA recommendation to fully develop criteria for taximeter audit trail criteria.

For additional background on this item, refer to the NCWM 1999 S&T Final Report.

354-3 VC S.6. (b) Power Interruption, Electronic Taximeters

(This item was adopted as part of the consent calendar.)

Source: Carryover Item 354-5. (This item originated from the Northeastern Weights and Measures Association and first appeared on the Committee's 1999 agenda.)

Recommendation: Modify paragraph S.6. (b) Power Interruption, Electronic Taximeters as follows:

S.6. Power Interruption, Electronic Taximeters.

(a) After a power interruption of 3 seconds or less, the fare and extras indications shall return to the previously displayed indications and may be susceptible to advancement without the taximeter being cleared.

(b) After a power interruption exceeding 3 seconds, the fare and extras indications shall return to the previously displayed indications and shall not be susceptible to advancement until the taximeter is cleared.

After restoration of power following an interruption exceeding 3 seconds, the previously displayed fare shall be displayed for a maximum of 1 minutes, at which time the fare shall automatically clear and the taximeter return to the vacant condition.*

****[Nonretroactive as of January 1, 2002.]***

[Effective and nonretroactive as of January 1, 1994. Retroactive after January 1, 1999.]

(Added 1988)(Amended 1989 and 1990, and 200X)

Discussion: The requirement for long-term power interruption in paragraph S.6.(b) has no limits on how long the indications must be displayed after a power loss. There is concern that the next customer entering the vehicle may assume that the previous transaction information returning to the display screen after a power loss represents some part of his or her transaction. NEWMA recommends limiting the time a previous fare is displayed when power returns.

During the 1999 Interim Meeting, the Committee heard comments that, unlike many other weighing and measuring devices which rely on the local utility for uninterrupted operation, taximeters depend on the vehicle battery for a power source. Thus, the likelihood of an unintentional power interruption is far less for taximeters than for other device types. The International Taxicab and Livery Association (ITLA) opposed the proposal because it is unaware of any consumer complaints about the issue. One taximeter manufacturer notified ITLA that the proposed requirement would necessitate a firmware change. Based on these comments, the Committee gave this item informational status on its 1999 agenda to allow additional time for weights and measures officials and the taximeter industry to give input.

During its 1999 Technical Meeting, the Western Weights and Measures Association (WWMA) recommended this item to remain informational until weights and measures jurisdictions and industry representatives provide additional data about the effects of the proposal. Although the 3-second time interval for the duration of a power interruption criteria has existed since 1990, the WWMA asked if industry has any concerns about the interval. In 1990, the NCWM shortened the time interval from 10 seconds to 3 seconds to discourage disconnecting slide-mounted taximeters at the termination of one fare and reconnecting them at the initiation of the next fare.

In 1999, the Northeastern Weights and Measures Association (NEWMA) supported this item as written and recommended that the item become a voting item for July 2000 NCWM Annual Meeting.

Based on comments received from industry and regional associations, the Committee recommended the proposed changes to paragraph S.6. as outlined in the recommendation above for a vote. The Committee believes that the proposed enforcement date of January 1, 2002, provides sufficient time for the taxi industry to comply with the new requirement.

During the 2000 NCWM Annual Meeting, the Committee heard a brief report on taximeter issues covered during the June 2000 New York City Taxi and Limousine Commission meeting between industry, weights and measures, and government officials. Taximeter manufacturers acknowledged that many taximeter designs meet the proposed requirement limiting the display of transaction information to a maximum of 3 minutes when power is restored after a power interruption. The manufacturers agreed that 3 minutes is too long a period because the turnover rate for new fares is approximately 1 minute. After 1 minute, the indications should return to “vacant” or “for hire.” The Committee agreed that a 1-minute time limit allows the driver to complete the transaction and lessens the opportunity for fraudulently charging the next fare for previous trip charges. Consequently, the Committee modified the proposal to allow a maximum of 1 minute to display previous fare information after restoration of power following a power interruption that exceed 3 seconds.

357 Near-Infrared Grain Analyzers – Tentative Code

357-1 I Near-Infrared Grain Analyzers, Indication of Additional Constituent Values

Source: Carryover Item 357-2. (This item originated from the Near-Infrared (NIR) Grain Analyzer Sector and first appeared on the Committee’s 1999 agenda.)

Discussion: The Committee reviewed the following proposal to modify the Near-Infrared Grain Analyzer (NIR) Code to include requirements for corn protein, oil, and starch, barley protein, and soybeans protein, and oil.

S.1. Design of Indicating, Recording, and Measuring Elements.

S.1.1. Digital Indications and Recording Elements.

- (a) *Analyzers shall be equipped with a digital indicating element.*
- (b) *The minimum height for the digits used to display constituent values shall be 10 mm.*
- (c) *Analyzers shall be equipped with a communication interface that permits interfacing with a recording element and transmitting the date, grain type or class, constituent values, and calibration version identification.*
- (d) *A digital indicating element shall not display, and a recording element shall not record, any constituent value before the end of the measurement cycle.*
- (e) *~~Wheat protein content shall be recorded and displayed as percent protein reported on a constant moisture basis of 12 percent wet basis.~~ Constituent content shall be recorded and displayed as percent of total mass using the moisture basis specified in Table S.1.1.(e).*
- (f) *An analyzer shall not display or record any constituent value that is beyond the operating range of the device unless the constituent value representation includes a clear error indication (and recorded error message with the recorded representation).*

[Nonretroactive and effective as of January 1, 2002.]

S.1.2. Selecting Grain Class and Constituent. - Provision shall be made for selecting, and recording the type or class of grain and the constituent(s) to be measured. The means to select the grain type or class and constituent(s) shall be readily visible and the type or class of grain and constituent(s) selected shall be clearly and definitely identified in letters (such as HRWW, HRSW, or PROT). A symbol to identify the display of the type or class of grain and constituent(s) selected is permitted provided that it is clearly defined adjacent to the display. Minimum acceptable abbreviations are listed in Table S.1.2. Meters shall have the capability

*(i.e., display capacity) of indicating the grain type using a minimum of four characters in order to accommodate the abbreviations listed in Table S.1.2.
[Nonretroactive and effective as of January 1, 2002.]*

Add a new Table S.1.1.(e) Constant Moisture Basis for Constituent Display and Recording to NIR Code to read as follows:

Table S.1.1.(e) Constant Moisture Basis for Constituent Display and Recording		
<u>Grain Type or Class</u>	<u>Constituent(s)</u>	<u>Moisture Basis</u>
<u>Durum Wheat, Hard Red Spring Wheat, Hard Red Winter Wheat, Hard White Wheat, Soft Red Winter Wheat, Soft White Wheat</u>	<u>Protein</u>	<u>12 percent</u>
<u>Soybeans</u>	<u>Protein</u> <u>Oil</u>	<u>13 percent</u>
<u>Two-rowed Barley</u> <u>Six-rowed Barley</u>	<u>Protein</u>	<u>0 percent (dry basis)</u>
<u>Corn</u>	<u>Protein</u> <u>Oil</u> <u>Starch</u>	<u>0 percent (dry basis)</u>

Modify Table S.1.2. Grain Types Considered for Type Evaluation and Calibration and Minimum Acceptable Abbreviations to read as follows:

Table S.1.2. Grain Types Considered for Type Evaluation and Calibration and Minimum Acceptable Abbreviations	
<u>Grain Type</u>	<u>Minimum Acceptable Abbreviation</u>
<u>Durum Wheat</u>	<u>DURW</u>
<u>Hard Red Spring Wheat</u>	<u>HRSW</u>
<u>Hard Red Winter Wheat</u>	<u>HRWW</u>
<u>Hard White Wheat</u>	<u>HDWW</u>
<u>Soft Red Winter Wheat</u>	<u>SRWW</u>
<u>Soft White Wheat</u>	<u>SWW</u>
<u>Soybeans</u>	<u>SOYB</u>
<u>Two-rowed Barley</u>	<u>TRB</u>
<u>Six-rowed Barley</u>	<u>SRB</u>
<u>Corn</u>	<u>CORN</u>

Modify paragraphs N.1.1. Field Inspection and N.1.2. Standard Reference Samples, Wheat to read as follows:

N.1. Testing Procedures.

N.1.1. Field Inspection. - Whole grain samples shall be used as the official field inspection standards. Five samples per grain type or class shall be used to check instrument performance. Each sample will be analyzed once. One of the samples will be analyzed an additional four times to test instrument repeatability. For ground grain instruments, the ground sample will be repacked four times. A new grind is not required.

~~Wheat~~ ~~protein~~ Constituent values shall be assigned to test samples by the Grain Inspection, Packers and Stockyards Administration (GIPSA). Tolerances shall be applied to individual sample measurements, the average of individual measurements on each of the five test samples, and the maximum difference (range) in results for five analyses on one of the test samples.

N.1.2. Standard Reference Samples, ~~Wheat~~. - Reference samples used for field inspection purposes shall be clean and selected to reasonably represent the constituent range. These

samples shall be selected such that the difference between ~~wheat protein constituent~~ values obtained using the GIPSA standard reference method and an official GIPSA NIR ~~wheat protein grain~~ analyzer does not exceed ~~0.3~~ one-half of the acceptance tolerance shown in Table T.2, for individual test samples or 0.15 0.375 times the acceptance tolerance shown for the average of five samples.

Modify Table T.2. to read as follows:

Table T.2. Acceptance and Maintenance Tolerances for NIR Wheat Protein Grain Analyzers				
Type of Grain	Constituent	Individual Samples (percent)	Average for Five Samples (percent)	Range for Five Retests (percent)
Durum Wheat, Hard Red Spring Wheat, Hard Red Winter Wheat, Hard White Wheat, Soft Red Winter Wheat, Soft White Wheat	<u>protein</u>	<u>0.60</u>	<u>0.40</u>	<u>0.40</u>
<u>Soybeans</u>	<u>protein</u>	<u>0.80</u>	<u>0.60</u>	<u>0.60</u>
	<u>oil</u>	<u>0.70</u>	<u>0.50</u>	<u>0.50</u>
<u>Two-rowed Barley</u> <u>Six-rowed Barley</u>	<u>protein</u>	<u>0.70</u>	<u>0.50</u>	<u>0.50</u>
<u>Corn</u>	<u>protein</u>	<u>0.80</u>	<u>0.60</u>	<u>0.60</u>
	<u>oil</u>	<u>0.70</u>	<u>0.50</u>	<u>0.50</u>
	<u>starch</u>	<u>1.00</u>	<u>0.80</u>	<u>0.80</u>

Discussion: During the NIR Grain Analyzer Sector’s March 1998 meeting, weights and measures representatives reported seeing an increasing number of NIR Analyzers in their jurisdictions. These representatives also reported that much of the commercial usage of NIR devices was for corn and soybeans. Grain industry representatives reported that the industry increasingly contracts directly with the producer to obtain “enhanced value” grains. There is a growing demand for measurement of protein and oil for an increasing number of grain types. In response to these observations, the Sector proposed modifying the Handbook 44 NIR Grain Analyzer Tentative Code to include requirements for corn protein, oil, and starch; barley protein; and soybean protein and oil.

During the 1999 NCWM Annual Meeting, the Committee gave this item informational status because industry commented that the requirements may be premature.

The following discussion is excerpted from the September 1999 Sector Summary. The NIR Sector is in the process of finalizing a study of the proposal’s new constituents values. In 1999, eight States participated in the study. Maryland and Georgia collected samples; Arkansas, Iowa, Illinois, Missouri, Nebraska, and North Carolina collected samples and tested NIR devices.

During the September 1999 Sector meeting, Diane Lee (Office of Weights and Measures, NIST) reported the results of a study based on available State data. During the study, NIR devices were tested using soft red winter wheat (protein), soybeans (protein and oil) and corn (oil). Soybean samples used in the study were from Georgia, Missouri, and Maryland; soft red winter wheat samples were from North Carolina; and corn samples were from Illinois. Reference constituent values were determined by USDA-GIPSA. The study samples met the requirements of the tentative code. Tests for corn protein and starch were initially part of the study, but these samples did not meet the proposed tolerances shown above in paragraph N.1.2. Standard Reference Sample. The report includes results of a July 1996 Nebraska survey of 29 devices three of the recommended five hard red winter wheat samples. The following table shows the preliminary study results:

Preliminary Results of the September 1999 Study on NIST Handbook 44 Near-Infrared Grain Analyzer Tentative Code Proposed Indications of Additional Constituent Values					
	Corn		Soybeans		Wheat
	Oil at 0% Moisture	Oil at 13% Moisture	Protein at 13 % Moisture	Protein at 12% Moisture	
Number of devices tested	57	31	32	48	
Number of devices failing one or more tests	27	3	6	21	
Device Rejection Rate	47.4 %	9.7 %	18.8 %	43.8 %	
% Failing Test Criteria 1	21.1 %	9.7%	18.8 %	18.8 %	
% Failing Test Criteria 2	8.8 %	0.0 %	12.5 %	35.4 %	
% Failing Test Criteria 3	19.3 %	0.0%	6.3 %	22.9 %	
Criteria 1: Individual Sample Test; Criteria 2: Average of 5 Samples; and Criteria 3: Range for 5 Retests Moisture (Wet Basis)					

The final NIR study report will be completed and distributed when the remaining study participants provide additional information.

Grain industry comments about the Sector’s proposal to add corn, soybeans, and barley to the NIR Tentative Code highlighted the prematurity of establishing a specific moisture basis for products other than the 12% basis for wheat. Industry believed that the marketplace is currently undecided on an appropriate moisture basis for many proposed commodities such as high oil corn. Industry agreed that establishing specific moisture bases for these products could create confusion and potential market disruption if the proposed Handbook 44 moisture bases for corn and soybeans differ from bases in commercial contracts. The grain industry prefers flexibility to set moisture basis for specific products because of the wide variance in moisture bases used when buying or selling grains with unique characteristics.

After reviewing the field survey data, the Sector noted that a significant number of rejected devices may be rejected as a result of the device operators’ misunderstanding about the moisture basis to which the device is calibrated or confusion about how to handle the conversion between the device’s reading and different moisture basis.

One Sector member questioned if the tolerance that is applied to the range of five retests for oil in corn was too stringent. Another member indicated the instruments exhibiting excessive range might be related to sample feeding problems.

In the ensuing discussion, it became apparent that the practical problems associated with maintaining uniform inspections between devices in the field requires inspections, tolerances, and regulatory samples based on specific fixed moisture bases. On the other hand, the Sector recognized that the grain industry requires the flexibility to use different moisture bases. The Federal System addresses this problem by reporting constituent concentration at both a “standard” moisture and at the moisture basis requested by the customer if other than standard. An example of the Federal System report for dry basis protein requests for wheat, which has a “standard” moisture basis of 12% is: 14% protein at 12 % moisture; at 0% moisture the protein is 15.9%.

Current commercial devices convert to different moisture basis in a variety of ways. Some of the devices that officials encountered on the study were calibrated to read direct at dry basis. Conversions to other moisture bases were accomplished by manually multiplying the device’s dry basis reading by 100, then subtracting the new basis, and dividing the results by 100. Some devices measured on an “as is” moisture basis then converted to any moisture basis keyed in by the operator; however, those devices also required calibration to measure the moisture of the sample. Other devices were calibrated to read direct at a fixed non-zero moisture basis. The Sector recognized the following problems while assessing the suitability of many NIR devices for operating in a regulatory application.

- Constituents results were frequently displayed/recorded with no clear indication of moisture basis.
- Field inspectors had no way to determine the moisture basis from which calibration was derived.

The issue of special calibrations was raised for genetically modified organisms (GMO) such as herbicide-resistant soybeans and high oil corn. A case was cited where a company’s contracts stipulated that product acceptability was based on tailoring device calibrations to the company’s product. A measurement system closely tied to one product bars other products from entering the marketplace. Equally competitive products are less likely to pass because they do not “fit” the special calibration. It was suggested that NIST-OWM should hold an informational meeting where representatives from

the special genetics sector of the grain processing and grain trade industry and producer organizations could be made aware of national uniformity and how equity in the marketplace affects NIR devices in a regulated environment.

Mr. David Funk (GIPSA) noted that GIPSA is not required to provide inspection for non-grade determining factors. He also reported that GIPSA is interested in measuring value added commodities, especially those that might lead to expanding U.S. grain markets. Funk also reported that GIPSA will meet with individual biotechnology companies that have developed GMOs to discuss how they might work together.

Several Sector members believed that establishing a nationally recognized reference laboratory is essential to an effective enforcement program. Sector members noted the importance of establishing a lead laboratory that is empowered to mediate or resolve disputes for multiple laboratories operating in the program.

The Sector agreed that until the issues revealed in the NIR study can be resolved, the current Handbook 44 NIR Code should remain tentative. The Sector Technical Advisor and NTEP Laboratory representatives were asked to develop a proposal that addresses the moisture basis issue for consideration by the Sector by August 2000. The Sector plans to forward a recommendation to the NCWM for consideration by the 2001 Annual Meeting.

During the Western Weights and Measures Association (WWMA) S&T Committee work session, one NIR Sector member commented that the Sector plans to significantly modify this proposal; therefore, the WWMA recommended that this item remain informational pending proposed modifications by the Sector.

The Central Weights and Measures Associations noted that adding constituents to the NIR Code may delay moving the code from tentative to permanent status.

The Northeastern Weights and Measures Association recommended this item to remain informational until the NIR Sector proposes any modifications.

The S&T Committee considered the Sector's proposal to modify the Near-Infrared Grain Analyzer Code to recognize moisture basis for corn protein, oil, and starch, barley protein, and soybean protein, and oil. The Sector provided grain industry comments to the Committee indicating that the current market is undecided on the appropriate moisture basis for wheat and other constituents. Therefore, the Committee recommended that the proposal be given informational status to allow the Sector time to develop appropriate language that addresses moisture basis for new constituents.

360 Other Items

360-1 I Revise NIST Handbook 44

A Work Group was appointed in 1999 by then NCWM Chairman Wes Diggs to review and revise NIST Handbook 44 to simplify its language and format. This item is included in the S&T Committee Agenda to provide interested parties with information on work affecting Handbook 44. The Handbook 44 Working Group held its first meeting in Olympia, Washington, in September 25, 1999, when it developed a tentative work plan.

The Western, Central, and Southern Weights and Measures Associations support the Working Group's efforts and encourage completion of their work.

The Northeastern Weights and Measures (NEWMA) strongly supported NCWM Chairman Diggs' efforts in forming a Work Group to review and re-format Handbook 44. There was unanimous agreement that the content of Handbook 44 has become very difficult for the average field inspector to interpret because of the technical language. Since the advent of NTEP, technically related items come before the NCWM S&T Committee that relate more to implementing NTEP policies than addressing the needs of weights and measures officials. NEWMA recognized the need to address issues in Publication 14, but Handbook 44 needs to be revised, reformatted, and simplified to address the needs of the field officials. The NEWMA encouraged the Working Group to develop a product that returns to the original intent of Handbook 44 and retains the concept of "basic understanding."

During the 2000 Annual Meeting, Work Group Chairman Ron Murdock (NC) reported that work is in progress by two Work Group Subcommittees to reformat specific code areas; however, no changes are planned to the text. Chairman

Specifications and Tolerances Committee

Murdock indicated plans to update the Board of Directors on the group's work at the 2001 NCWM Interim Meeting. The Work Group will ask for approval for work completed and the direction on the next phase of revising NIST Handbook 44.

For additional details on the Working Group, refer to Board of Director's Agenda Item 101-16.

360-2 I International Organization of Legal Metrology (OIML) Report

The Committee received an updated OIML Activities report from Ken Butcher and Wayne Stiefel, in the NIST Technical Standards Activities Program and a report on program changes from Dr. Charles Ehrlich, the new Program Chief. This report is included as part of the NCWM OIML Board of Director's Final Report Item 101-10 Program, International Organization of Legal Metrology, Appendix B.

The Committee on the International Organization of Legal Metrology (OIML), the Asian-Pacific Legal Metrology Forum (APLMF), and other international activities are generally within the purview of the S&T Committee. Additional information on OIML activities is available on the OIML web site at <http://www.oiml.org/>.

For more information on weighing devices and taximeters, contact Ken Butcher by telephone at 301-975-4859 or by e-mail at kenneth.butcher@nist.gov. For more information on measuring devices contact Wayne Stiefel by telephone at 301-975-4011, or by e-mail at s.stiefel@nist.gov. Mr. Butcher and Mr. Stiefel can also be reached at NIST, 100 Bureau Drive STOP 2150, Gaithersburg, MD 20899 or by fax at 301-926-1559.

360-3 D Developing Issues

The NCWM established a process to disseminate information about emerging issues which have merit and are of national interest. Developing issues have not received sufficient review by all parties affected by the proposals or may be insufficiently developed, to warrant review by the NCWM S&T Committee. The developing issues listed were reviewed by at least one regional association or technical committee. The S&T Committee encourages interested parties to examine the proposals and send their comments to the contact listed in each item.

The developing issues are listed in the following appendices: Appendix A-Scales, Appendix B-Belt-Conveyor Scale Systems, Appendix C-Taximeters, and Appendix D-Grain Moisture Meters. Each appendix contains all developing items related to a specific Handbook 44 Code Section.

During the 2000 NCWM Interim Meeting, the Committee did not take comments on developing issues. The Committee did not receive notice from interested parties planning to address any developing issues at the open hearing session.

The Committee asked that the regional weights and measures associations, and Sectors continue their work to fully develop each proposal. Should an association or Sector decide to discontinue work on a developmental item, the Committee asks that it be notified as soon as possible.

At the 2000 NCWM Annual Meeting, the Committee asked that submitters of developing items present updates on these issues for the 2001 Agenda. Submitters are encouraged to provide regular updates on work that has been done to prepare these issues for S&T Committee action.

Monty H. Hopper, Kern County, California, Chairman

Constantine V. Cotsoradis, Kansas
Mark Coyne, City of Brockton, Massachusetts
George S. Shefcheck, Oregon
Richard W. Wothlie, Maryland

Ted Kingsbury, Canada, Technical Advisor
Juana Williams, NIST, Technical Advisor

Committee on Specifications and Tolerances

Appendix A (Item 360-3) Developing Issues – Scales

Item 1 D Livestock Scales, Concentrated Load Capacity (CLC) Requirements

Source: National Type Evaluation Technical Committee (NTETC) Weighing Sector

Recommendation: Modify Handbook 44 to address CLC requirements for livestock scales.

Discussion: NIST Handbook 44 requires marking of scales with the CLC; however, there are no specific guidelines to determine performance of a livestock scale based on CLC.

The Handbook 44 definition for CLC addresses vehicle scales and describes the vehicle footprint where the load may be concentrated during scale use and test. Specifically, the Handbook 44 CLC vehicle scale formula is derived from the Federal Highway Bridge Formula and represents the maximum load concentration for a group of two or more axles with a centerline spaced 4 feet apart for an axle width of 8 feet. The CLC maximum load test pattern that applies to vehicle scales does not represent the typical loading pattern of a livestock scale platform. The weight load of live animals may be distributed randomly or animals may group together in one corner of the platform. The USDA Grain Inspection Packers and Stockyard Administration (GIPSA) recommends a maximum load of 110 pounds per square foot for livestock scales.

The Sector's Technical Advisor plans to work with GIPSA to develop a proposal for livestock scale loading. For input on this item, contact Weighing Sector Chairman Nigel Mills (Hobart Corporation) by telephone at 937-332-3205 or Technical Advisor Richard Suiter (NIST) by telephone at 301-975-4406.

Item 2 D Items by Count; Indications and Recorded Representations

Source: National Type Evaluation Technical Committee (NTETC) Weighing Sector

Recommendation: Modify Handbook 44 to prohibit items by count in decimal indications or recorded representations.

Discussion: The Weighing Sector examined a proposal to develop language in Handbook 44 to prohibit expressing items by count as decimal values; however, no specific language was forwarded to the NCWM S&T Committee. The Publication 14 checklist for Electronic Cash Registers (ECRs) Interfaced with Retail Motor-Fuel Dispensers (paragraph 3.7 page 9-11) states that decimal expressions of items by count are acceptable; however, the ECR Scales checklist has no corresponding criteria.

Manufacturers recommend that the Sector notify all parties who might be affected by proposed changes to Handbook 44 and Publication 14 to correct the decimal indication of items by count. Contact Weighing Sector Chairman Nigel Mills (Hobart Corporation) by telephone at 937-332-3205 or Technical Advisor Richard Suiter (NIST) by telephone at 301-975-4406 to provide input on this issue.

**Appendix B (Item 360-3)
Developing Issues – Belt-Conveyor Scale Systems**

Item 1 D S.1.4. Recording Elements and Recorded Representations

Source: Western Weights and Measures Association (WWMA)

Recommendation: Modify paragraph S.1.4. Recording Elements and Recorded Representations as follows:

S.1.4. Recording Elements and Recorded Representations. - The value of the scale division of the recording element shall be the same as that of the indicating element. The belt-conveyor scale system shall record the initial indication and the final indication of the master weight totalizer, the quantity delivered*, the unit of measurement (e.g., kilograms, tonnes, pounds, tons, etc.), the date, and time. A zero reference number shall be recorded before and after any initial or final unit of weighing**. This information shall be recorded for each delivery*.
[Nonretroactive as of January 1, 1986.]
[*Nonretroactive as of January 1, 1994.]
[**Nonretroactive as of January 1, 2002.]
(Amended 1993)*

Discussion: The proposal is intended to inform the buyer and seller that a zero condition is established at both the start and end of each transaction. Contact the WWMA S&T Committee, Belt Conveyor Scale Sector Chairman Paul Chase (Chase Technology) by telephone at 612-427-2356 or Technical Advisor Richard Suiter (NIST) by telephone at 301-975-4406 to provide input on this issue.

Item 2 D S.3.1. Design of Zero-Setting Mechanism

Source: Western Weights and Measures Association (WWMA)

Recommendation: Modify paragraph S.3.1. Design of Zero-Setting Mechanism as follows:

*S.3.1. Design of Zero-Setting Mechanism. - The range of the zero-setting mechanism shall not be greater than ∇ 2 percent (4 percent zero range**) of the rated capacity of the scale without breaking the security means. ~~Automatic and semi-automatic~~ zero-setting mechanisms shall be so constructed that the resetting operation is carried out only after a whole number of belt revolutions and the completion of the setting or the whole operation is indicated. *An audio or visual signal shall be given when the automatic and semiautomatic zero-setting mechanisms reach the limit of adjustment of the zero-setting mechanism.**
[*Nonretroactive as of January 1, 1990.]
[**Nonretroactive as of January 1, 2002.]
(Amended 1989)*

Discussion: The proposal restricts the system's zero-setting mechanism to only automatic means. There are concerns about conflicts with OIML requirements which permit a semiautomatic zero-setting mechanism. Some devices in the marketplace are equipped with only a semiautomatic zero-setting mechanism for adjusting zero. The proposed range as written is not intended as a twofold increase in the permissible zero-setting mechanism range.

To provide input on this proposal, contact the WWMA S&T Committee, Belt Conveyor Scale Sector Chairman Paul Chase (Chase Technology) by telephone at 612-427-2356 or Technical Advisor Richard Suiter (NIST) by telephone at 301-975-4406.

Item 3 D S.3.2. - Sensitivity at Zero Load (For Type Evaluation)

Source: Western Weights and Measures Association (WWMA)

Recommendation: Modify paragraph S.3.2. - Sensitivity at Zero Load (For Type Evaluation) as follows:

*Sensitivity at Zero Load (For Type Evaluation). - When a system is operated for a time period equal to the time required to deliver the minimum test load and with a test load calculated to indicate ~~two scale divisions~~ 0.12 percent applied directly to the weighing element, the totalizer shall advance not less than ~~one~~ 0.06 percent or more than ~~three scale divisions~~ 0.18 percent of its rated capacity. An alternative test of equivalent sensitivity, as specified by the manufacturer, shall also be acceptable.
[Nonretroactive as of January 1, 1986.]*

Discussion: The proposal is intended to declare tolerances as percentage values, rather than scale division values. The WWMA asked industry for comments about the proposed tolerances. To provide input, contact the WWMA S&T Committee, Belt Conveyor Scale Sector Chairman Paul Chase (Chase Technology) by telephone at 612-427-2356 or Technical Advisor Richard Suiter (NIST) by telephone at 301-975-4406.

Item 4 D N.3.1. Zero Load Tests

Source: Western Weights and Measures Association (WWMA)

Recommendation: Modify paragraph N.3.1. Zero Load Tests as follows:

N.3.1. Zero Load Tests. – If a belt-conveyor scale system has been idle for a period of two hours or more, the system shall be run for not less than 30 minutes when the temperature is above 5 °C (41 °F). When the temperature is below 5 °C (41 °F), additional warm-up time, depending upon conditions, is required before beginning the zero-load tests. The variation between the beginning and ending indication of the master weight totalizer shall not ~~exceed be one than 1 scale division~~ 0.06 percent of the rated capacity when the ~~instrument~~ automatic zero-setting mechanism is operated at no load for a period of time equivalent to that required to deliver the minimum totalized load of 1000 scale divisions.

The zero-load test shall be conducted over a whole number of belt revolutions, but not less than three revolutions or 10 minutes operation, whichever is greater.

During any portion of the zero-load test, the totalizer shall not ~~change more than three scale divisions~~ exceed a range of 0.18 percent of its rated capacity from its initial indication (Amended 1989)

Discussion: The proposal is intended to provide a better statistical method of determining the system's sensitivity because it is expressed as a percent of the rated capacity. The zero is established based on the automatic zero-setting mechanism, and that zero is adequately monitored.

The WWMA recommends that this item be given informational status and asks for input from industry representatives. Forward comments on this issue to WWMA S&T Committee, Belt Conveyor Scale Sector Chairman Paul Chase (Chase Technology) by telephone at 612-427-2356 or Technical Advisor Richard Suiter (NIST) by telephone at 301-975-4406.

Item 5 D N.3.2. Material Tests

Source: Western Weights and Measures Association (WWMA)

Recommendation: Modify paragraph N.3.2. Material Tests as follows:

N.3.2. Material Tests.

- (f) **On initial verification, at least three individual materials tests shall be conducted. On subsequent verifications, at least two individual materials tests shall be**

conducted. [The performance of the equipment is not to be determined by averaging the results of the individual tests when more than one source of material or top-size is used in the weighing process. The results of all these materials tests shall be within the tolerance limits.

(Amended 1986 and 1989)

Discussion: The proposal is intended to require test of the conveyor as used when there is more than one source or size of material for the material test. The proposal clarifies that the material test results must not be averaged when there are multiple sources and sizes of material. The WWMA believes that the repeated use of the term “material test” is unnecessary and that the term “top size” is confusing and requires defining. The WWMA believes that the proposal has merit; however, the item remains developmental until these concerns are addressed.

Contact the WWMA S&T Committee, Belt Conveyor Scale Sector Chairman Paul Chase (Chase Technology) by telephone at 612-427-2356 or Technical Advisor Richard Suiter (NIST) by telephone at 301-975-4406 with any comments.

Item 6 D T.1.2. Variation in Zero Reference Values

Source: Western Weights and Measures Association (WWMA)

Recommendation: Add new paragraph T.1.2. Variation in Zero Reference Values to the Belt-Conveyor Scale Systems Code as follows:

T.1.2. Variation in Zero Reference Values. - Variation in a zero reference number on a no-load conveyor system shall not be greater than ± 0.25 percent of the rated capacity of the scale when randomly monitored 95 out of 100 zero measurements in a natural environment. Ambient temperature shall be in a range not greater than 20 °C (36 °F) in a 24-hour period. [Nonretroactive as of January 1, 2002.]

Discussion: Environmental factors such as wind, moisture, dust, and temperature, affect a belt-conveyor scale system’s zero under no-load condition. The proposal is intended to establish acceptable variations in the zero value over specific temperature intervals.

The WWMA noted that the proposed range does not cover all environmental temperature conditions. The WWMA recommended modifying the proposal to express a relationship between tolerances and temperature ranges; it made this item developmental to allow additional time for input on this modification. To provide input, contact the WWMA S&T Committee, Belt Conveyor Scale Sector Chairman Paul Chase (Chase Technology) by telephone at 612-427-2356 or Technical Advisor Richard Suiter (NIST) by telephone at 301-975-4406.

Item 7 D UR.2.2. Conveyor Installation

Source: Western Weights and Measures Association (WWMA)

Recommendation: Modify paragraphs UR.2.2.(a) and (b) Conveyor Installation as follows:

UR.2.2. Conveyor Installation. - The design and installation of the conveyor leading to and from the belt-conveyor scale is critical with respect to scale performance. The conveyor may be horizontal or inclined but, if inclined, the angle shall be such that slippage of material along the belt does not occur. The belt-conveyor shall be protected from any precipitation. Installation shall be in accordance with the scale manufacturer’s instructions and the following:

- (a) a belt-conveyor scale structure shall be so installed that neither its performance nor operation will be adversely affected by any characteristic of the weighed material, foundation, supports, covers (when present), or any other equipment;**
- (b) all live portions of the conveyor scale structure shall be protected by appropriate guard devices. On incline belt-conveyors, scale structure and surrounding supports shall have a**

minimum clearance of 10 percent above the top-size of the material (but not to exceed 3 inches) to prevent accidental interference with the weighing operation;

The proposal is intended to prevent belt-conveyor scales in a no load condition from indicating an incorrect zero when environmental or physical factors that adversely affect the system are undetected.

The WWMA recognized that pending NCWM action on 2000 Agenda Item 321-2 UR.2.2. Conveyor Installation and UR.2.2.1 For Scales not Installed by the Manufacturer (1999 Carryover Item 321-2) may affect this proposal. Therefore, the WWMA recommended this proposal be given developmental status. Contact the WWMA S&T Committee, Belt Conveyor Scale Sector Chairman Paul Chase (Chase Technology) by telephone at 612-427-2356 or Technical Advisor Richard Suiter (NIST) by telephone at 301-975-4406 with comments.

Item 8 D UR.3.2. (b) Maintenance

Source: Western Weights and Measures Association (WWMA)

Recommendation: Add a new paragraph to paragraph UR.3.2. Maintenance and modify paragraph UR.3.2. as follows:

UR.3.2. Maintenance

(b) Simulated load tests or materials tests shall be conducted at periodic intervals between official tests, certification, when the scale system runs under a no-load condition to provide reasonable assurance that the device is performing correctly. The action to be taken as a result of simulated load test is as follows:

A materials test shall be performed under any environmental conditions and in any ambient temperature range. The action to be taken as a result of materials test error is as follows:

Discussion: The proposal is intended to prevent any party from benefiting from the zero bias of a belt-conveyor scale system.

The WWMA finds some merit in this new proposal, but it recommends the proposal be given developmental status. Contact the WWMA S&T Committee, Belt Conveyor Scale Sector Chairman Paul Chase (Chase Technology) by telephone at 612-427-2356 or Technical Advisor Richard Suiter (NIST) by telephone at 301-975-4406 with comments.

Item 9 D UR.3.2. (e) Maintenance

Source: Western Weights and Measures Association (WWMA)

Recommendation: Modify paragraph UR.3.2. Maintenance (e) as follows:

UR.3.2. Maintenance

(d) Records of calibration and maintenance, including conveyor alignment, chart recorder, auto-zero tracking and materials test data shall be maintained on site for at least three seven current years to develop a history of scale performance. Copies of any report as a result of a test or repair shall be mailed to the official with statutory authority as required. The current date and correction factor(s) for simulated load equipment shall be recorded and maintained in the scale cabinet.

(Amended 1991)

Discussion: The WWMA recognized that the chart recorder provides information about the feed rates and performs a separate function from other items already listed UR.3.2. (e). The WWMA asked for input from operators/customers to determine the necessity of maintaining data for 7 years.

The WWMA recognizes pending NCWM action on 2000 Agenda Item 321-5 UR.3.2.(c) Maintenance; Scale Alignment (1998 Carryover Item 321-4) may affect this proposal. The WWMA recommended that this proposal be given developmental status. Contact the WWMA S&T Committee, Belt Conveyor Scale Sector Chairman Paul Chase (Chase

Specifications and Tolerances Committee

Technology) by telephone at 612-427-2356 or Technical Advisor Richard Suiter (NIST) by telephone at 301-975-4406 to provide input.

**Appendix C (Item 360-3)
Developing Issues – Taximeters**

Item 1 D S.1.2. Advancement of Indicating Elements

Source: Northeastern Weights and Measures Association (NEWMA)

Recommendation: Modify paragraph S.1.2. Advancement of Indicating Elements as follows:

S.1.2. Advancement of Indicating Elements. - Except when a taximeter is being cleared, the primary indicating and recording elements shall be susceptible of advancement only by the movement of the vehicle or by the time mechanism. The meter shall only recognize distance input from the designated distance-measuring element and shall be capable of operation within the prescribed tolerances when subjected to electromagnetic disturbances.
(Amended 1988)

Discussion: Taximeters are capable of defrauding customers through the use of external oscillator circuits that add distance pulses to the distance input line of the meter. These easily designed circuits can be built with parts available at any electronics supply store. This proposal was developed to establish a standard requiring taximeters to detect and ignore fraudulent signals.

After the 2000 Interim Meeting, the Committee received written comment on paragraph S.1.2. Advancement of Indicating Elements (Agenda Item 360-3 Developing Issues, Appendix C-Taximeters) from the New York City Taxi and Limousine Commission. The Commission supported action to adopt requirements for equipping taximeters with an “anti-zapper” feature.

Contact NEWMA representative Ross Andersen (New York) by telephone at 518-457-3146 to comment on this proposal.

**Appendix D (Item 360-3)
Developing Issues – Grain Moisture Meters**

Item 1 D Modify the Grain Moisture Meters Code to Recognize Indications and Recorded Representations in Weight per Bushel

Source: National Type Evaluation Technical Committee Grain Moisture Meter (GMM) Sector

Recommendation: Modify 5.56(a) Grain Moisture Meter Code Section in Handbook 44 to recognize indications and recorded representation in weight per bushel as follows:

Amend the following paragraphs:

A.1. – This code applies to grain moisture meters; that is, devices used to indicate directly the moisture content of cereal grain and oil seeds. The code consists of general requirements applicable to all moisture meters and specific requirements applicable only to certain types of moisture meters. Requirements cited for “test weight per bushel” indications or recorded representations are applicable to devices incorporating an automatic test weight per bushel measuring feature.

S.1.1. Digital Indications and Recording Elements.

- (c) Meters shall be equipped with a communication interface that permits interfacing with a recording element and transmitting the date, grain type, grain moisture results, or test weight per bushel values and calibration version identification.
- (d) A digital indicating element shall not display and a recording element shall not record any moisture content values or test weight per bushel values before the end of the measurement cycle.
- (e) Moisture content results shall be displayed and recorded as percent moisture content, wet basis. Test weight per bushel results shall be displayed and recorded as pounds per bushel. Subdivisions of ~~this~~ these units shall be in terms of decimal subdivisions (not fractions).
- (g) A meter shall not display or record any moisture content or test weight per bushel values when the moisture content or test weight per bushel of the grain sample is beyond the operating range of the device, unless the moisture and test weight representation includes a clear error indication (and recorded error message with the recorded representation).
- (g) On multi-constituent meters (e.g., meters which also measure grain protein), provision shall be made for displaying and recording the constituent label (such as moisture, protein, etc.) to make it clear which constituent is associated with each of the displayed and recorded values. (Added 1995) (Added 1993) (Amended 1994 and 1995)

S1.4. Value of Smallest Unit. – The display shall permit ~~constituent~~ moisture value determination to both 0.01 percent and 0.1 percent resolution. The 0.1 percent resolution is for commercial transactions; the 0.01 percent resolution is for type evaluation and calibration purposes only, not for commercial purposes. Test weight per bushel values shall be determined to the nearest 0.1 pound per bushel.

S.2.4.1. Calibration Version. – A meter must be capable of displaying either calibration constants, a unique calibration name, or a unique calibration version number for use in verifying that the latest version of the calibration is being used to make moisture content and test weight per bushel determinations. (Added 1993)(Amended 1995)

S.2.6. Determination of Quantity and Temperature. – The moisture meter system shall not require the operator to judge the precise volume or weight and temperature needed to make an accurate moisture determination. External grinding, weighing, and temperature measurement operations are not permitted. In addition, if the meter is capable of measuring test weight per bushel, determination of sample volume and weight for this measurement shall be fully automatic.
(Added 1994)(Amended 1995)

S.4. Operating Instructions and Use Limitations. – The manufacturer shall furnish operating instructions for the device and accessories that include complete information concerning the accuracy, sensitivity, and use of accessory equipment necessary in obtaining a moisture content. Operating instructions shall include the following information:

- (d) the kind or classes of grain or seed for which the device is designed to measure moisture content and test weight per bushel;
- (e) the limitations of use, including but not confined to the moisture measurement range, test weight per bushel range, grain or seed temperature, maximum allowable temperature difference between grain sample and meter, kind or class of grain or seed, moisture meter temperature, voltage and frequency ranges, electromagnetic interferences, and necessary accessory equipment.

(Added 1984)

N.1.1. Transfer Standards.¹ - Official grain samples shall be used as the official transfer standards with moisture content values assigned by the reference methods. The reference methods shall be the oven drying methods as specified by the USDA GIPSA. The test weight per bushel value assigned to a test weight transfer standard shall be the average of 10 test weight per bushel determinations using the quart kettle test weight per bushel apparatus as specified by the USDA GIPSA. Tolerances shall be applied to the average of at least three measurements on each official grain sample. Official grain samples shall be clean and naturally moist, but not tempered (i.e., water not added).
(Amended 1992)

N.1.2. Minimum Test.¹ - A minimum test of a grain moisture meter shall consist of tests:
~~(a)~~with samples ~~(need not exceed three)~~ of each grain or seed type (need not exceed three) for which the device is used, and for each grain or seed type shall include the following:

- (a) tests of moisture indications, with samples having at least two different moisture content values within the operating range of the device; and if applicable,
- (b) tests of test weight indications, with at least the lowest moisture samples used in above.

(Amended 1986 and 1989)

¹ The U.S. Department of Agriculture, Grain Inspection, Packers and Stockyards Administration (GIPSA) uses a single brand and model of moisture meter for official inspection of moisture content in grains and other commodities. The moisture calibrations for the model are based on the official air-oven method and are developed and monitored on an established schedule using a broad range (with respect to geographical source, kind, class, moisture content, maturity, etc.) of grain samples at its central laboratory. GIPSA uses a hierarchical series of meter-to-meter intercomparisons to determine whether its field meters are operating within acceptable tolerances (∇ 0.2% with respect to standard meters). It has been shown that field meters checked by GIPSA procedures perform within H-44 maintenance tolerances (T.2.) when tested (N.1.) using official grain samples. Agencies lacking a sample capability representing the entire nation and traceable to the official laboratory reference method shall not use meter-to-meter field testing.

T.2. Tolerance Value. – Maintenance and acceptance tolerances shall be as shown in Table T.2. Tolerances for moisture measurements are expressed as a fraction of the percent moisture content of the official grain sample, together with a minimum tolerance. Tolerances

for test weight per bushel are (+) positive or (-) negative with respect to the value assigned to the official grain sample.

UR.1.1. Value of the Smallest Unit on Primary Indicating and Recording Elements. – The resolution of the moisture meter display shall be 0.1 percent moisture and 0.1 pounds per bushel test weight during commercial use.

UR.3.4. Printed Tickets

(b) The customer shall be given a printed ticket showing the date, grain type, grain moisture results, test weight per bushel and calibration version identification. The ticket shall be generated by the grain moisture meter system.

(Amended 1993 and 1995)

UR.3.10 Posting of Meter Operating Range. – The operating range of the grain moisture meter shall be clearly and conspicuously posted in the place of business such that the information is readily visible from a reasonable customer position. The posted information shall include the following:

(b) The moisture range and test weight per bushel range for each grain or seed for which the meter is to be used.

Modify Table T.2. Acceptance and Maintenance Tolerances for Grain Moisture Meters as follows:

Table T.2. Acceptance and Maintenance Tolerances for Grain Moisture Meters		
Moisture		
Type of Grain or Seed	<u>Acceptance and Maintenance Tolerance</u>	Minimum Tolerance
Corn, oats, rice, sorghum, sunflower	0.05 of the percent moisture content	0.8 percent in moisture content
All other cereal grains and oil seeds	0.04 of the percent moisture content	0.7 percent in moisture content
Test Weight per Bushel		
Type of Grain or Seed	<u>Acceptance and Maintenance Tolerance</u>	
Corn, oats	0.8 pounds per bushel	
All wheat classes	0.5 pounds per bushel	
Soybeans, barley, oats, rice, sunflower, sorghum	0.7 pounds per bushel	

Add the following paragraph:

S.1.3. Operating Range. – A meter shall automatically and clearly indicate when the operating range of the meter has been exceeded. The operating range shall specify the following:

(e) Test Weight per Bushel Range of the Grain or Seed. The test weight per bushel range of each grain or seed for which the meter is to be used shall be specified. A test weight per bushel value may be displayed when the test weight per bushel range is exceeded if accompanied by a clear indication that the test weight per bushel range has been exceeded.

Remove the following paragraph:

~~F.3. For Test Weight Per Bushel Indications or Recorded Representations. The maintenance and acceptance tolerances on test weight per bushel indications or recorded representations shall be 0.193 kg/hL or 0.15 lb/bu. The test methods used shall be those specified by the USDA GIPSA. (Amended 1992)~~

Discussion: The proposal was developed to provide a broader approach to the tolerance issue and establishes a separate standard covering automatic test weight per bushel (TW) devices with tolerances which address the specific application. The Sector heard that the Grain Inspection, Packers and Stockyards Administration (GIPSA) is close to evaluating a prototype automatic TW apparatus which might have more stringent tolerance requirements than moisture meters. The Sector also noted that it would be much easier to add requirements to the Grain Moisture Meter (GMM) Code than to develop a separate code. If necessary, the Sector may later consider developing a separate code for stand-alone automatic TW apparatus.

To provide manufacturers with a better idea about how the proposed code might apply to type evaluation, a subcommittee was formed to draft Publication 14 test procedures and a checklist that address GMMs with test weight per bushel capability. The subcommittee was asked to prepare a draft for the Sector to consider at its next meeting.

Six public Sector members agreed to conduct a field evaluation to further examine the proposed tolerances and test methods. Dr. Charles Hurburgh (Iowa State University, Agricultural Extension Service) agreed to draft a test form and develop the protocol for the field evaluation. A report of the field test results will be presented at the Sector's next meeting.

The Sector agreed that it was premature to recommend that the NCWM adopt the proposed changes to the Grain Moisture Meter Code until the subcommittee and States complete their work. To provide input on this proposal, contact the Grain Moisture Meter Sector Chairman Richard Wotthlie (Maryland) by telephone at 410-841-5790, Technical Advisors John Barber (J.B. Associates, representing NIST on contract) by telephone at 217-483-4232, or Diane Lee (NIST) by telephone at 301-975-4405.

Report of the Committee on Administration and Public Affairs

Jerry Flanders, Chairman
Georgia Department of Agriculture
Atlanta, Georgia

Reference
Key Number

400 Introduction

The Committee on Administration and Public Affairs (A&P Committee) submits its Annual Report for the 85th National Conference on Weights and Measures. This document consists of the Interim Report presented in NCWM Publication 16 "Committee Reports," as amended in the Addendum Sheets issued during the Annual Meeting. The Committee considered communications it received prior to and during the Annual Meeting in developing this report.

Table A identifies all of the items contained 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" after the item number. Items marked with an "I" after the reference key number are informational items. Table B lists the Appendices to 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.

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**Table C
Voting Results**

Reference Key Number	House of State Representatives		House of Delegates		Results
	Yeas	Nays	Yeas	Nays	
402-1	42	0	65	0	Passed
400	41	0	64	0	Passed

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

401 Regional Weights and Measures Association Activities

401-1 I Regional Reports

The A&P Committee reviewed the reports from the Northeast and Central Regional Associations. We request that each Regional Association:

1. Have the safety liaison (see 403-2) make a safety-related presentation during its annual regional meeting.
2. Identify training needs of the association, individual jurisdictions, and service personnel.
3. Promote the NCWM Certified Instructor Program (see 403-3).
4. Sponsor a Train-the-Trainer Class for its members (see 403-3).

402 Program Management

402-1 V Voluntary Program Assessment Working Group

(This item was adopted.)

Source: Board of Directors

Background: Sid Colbrook of the State of Illinois chaired the Voluntary Program Assessment Working Group (VPAW). The group's primary task was to develop a voluntary self-assessment program for weights and measures agencies. The original objective of establishing a national database to evaluate the effectiveness of weights and measures programs has been expanded to include minimum standards for weights and measures programs, model report forms, and criteria for self-assessment. Ross Andersen (NY) formed a Retail Motor Fuel Subgroup including Steve Martin (NY), Mike Sikula (NY), Barbara DeSalvo (OH), and Mike Belue (Belue Associates) that developed an evaluation checklist for retail motor-

fuel dispensers. The Subgroup also developed a model report form for inspecting and testing retail motor-fuel dispensers and minimum standards criteria.

At the 2000 NCWM Interim Meeting, the A&P Committee reviewed the third draft of a checklist for assessing a retail motor fuel program prepared by the Retail Motor Fuel Subgroup. The Retail Motor-Fuel Program Self-Assessment Checklist uses a question and answer format that allows users to perform a comprehensive program review by comparing the different program components to the model requirements in the checklist. The checklist contains minimum requirements for laws and regulations, test equipment, training, supervision, and enforcement practices. It also includes separate checklists for the administrative and inspection functions of a program. The checklist for retail motor-fuel devices serves as the model for future checklists for retail computing and vehicle scales, vehicle-tank meters, loading-rack meters, and other program functions such as package inspection.

Prior to the 85th Annual Meeting in July, VPAW met with members of the A&P Committee, Georgia Harris, Technical Advisor to the Metrology Subcommittee, and other interested parties. VPAW reported to the A&P Committee the status of the working group's Self-Assessment Checklist for Retail Motor Fuel Inspection Programs and asked the A&P Committee for further direction of the working group. Ms. Harris presented to the VPAW a comparison of ISO/IEC Guide 17025 and VPAW's Retail Motor Fuel Inspection Checklist and outlined the criteria for an "ideal self-assessment" program—a program based on international standards. While the self-assessment checklist is a first step, a workable infrastructure is needed to advance the program to meet international standards. Jack Kane (MT), a member of VPAW, also presented a self-assessment checklist that he developed for Vehicle Scales Testing Programs. The goal of VPAW and the A&P Committee is to have a checklist for all activities of the weights and measures program.

The A&P Committee also agreed to establish a peer-review-based recognition program for jurisdictions that successfully complete the self-assessment.

We commend Sid Colbrook and the other members of VPAW, especially Ross Andersen, Steve Martin, and Mike Sikula, Barbara DeSalvo, Mike Belue, and Jack Kane for volunteering their time and talents to develop the checklists.

Volunteers Needed

The A&P Committee requested volunteers to field test future checklists and assist in finalizing them for possible NCWM adoption. Volunteers from both State and local jurisdictions are invited to participate in the field evaluation of the checklists to ensure that they meet the diverse needs of the weights and measures community. To volunteer, please contact Sid Colbrook by e-mail at scolbrook@agr.state.il.us, by telephone at 217-785-8301 or by fax at 217-524-7801.

Volunteers are also needed to help develop checklists for other weights and measure activities such as retail computing scales, vehicle-tank meters, and others using the Retail Motor-Fuel Program Self-Assessment Checklist as a model. The checklist will be provided in electronic format and administrative and technical assistance will be available. Contact Sid Colbrook to volunteer.

Presentation at Annual Meeting

The A&P Committee sponsored a presentation on the Retail Motor-Fuel Program Self-Assessment Checklist at the 85th Annual Meeting.

Committee Recommendation: Based on information provided to the Committee and comments from the floor, modify the recommendation section of the report to read as follows:

Adopt the concept of voluntary self-assessment checklists for various areas of weights and measures inspection similar to the Retail Motor Fuel Dispenser checklists presented in Appendix A. The A&P Committee will establish a peer-review-based recognition program for jurisdictions that submit completed self-assessment checklists. The A&P Committee will routinely update and improve the checklists to ensure they reflect the needs of weights and measures programs. The A&P Committee will work with the Voluntary Program Assessment Work Group and the Metrology Subcommittee to make the self-assessment checklists as compatible as possible with established quality standards.

The A&P Committee needs volunteers from the weights and measures community to serve as members of the peer-review group to evaluate the checklists and supporting documentation.

402-2 I Safety Information

Source: State and Local Jurisdictions Incident/Accident Report Forms

The A&P Committee has not received any Incident/Accident Reports for the last 2 years. The NCWM Incident/Accident Report Form is available on the Internet at <http://www.nist.gov/ncwm> and on the OWM's Fax on Demand System at 1-800-925-2453 (request document 301). The Committee is in the process of adding more safety information on the OWM Homepage on the Internet. Each regional association has appointed a safety liaison to coordinate safety-related issues within each region and to work with the Committee's Safety Liaison, Charles Gardner. We hope that the regional liaisons will improve the distribution of safety information at the grassroots level. The Committee recommends that each regional association has its safety liaison make a safety-related presentation during each annual regional meeting.

The Regional Safety Liaisons are:

Western Weights and Measures Association:

Craig Leisy, Supervisor Weights and Measures
Seattle Licenses and Consumer Affairs
805 South Dearborn Street
Seattle, WA 98134
Tel: 206-386-1129 Fax: 312-386-1129

E-mail: craig.leisy@ci.seattle.wa.us

Central Weights and Measures Association:

Sherry R. Fowlkes, Inspector
Weights and Measures Department
1903 St. Mary's Avenue
Fort Wayne, IN 46808
Tel: 219-427-1157 Fax: 219-427-5789

E-mail: sherry.fowlkes@ci.ft-wayne.in.us

Northeastern Weights and Measures Association:

Michael J. Sikula
Weights and Measures Specialist
New York Bureau of Weights and Measures
373 North Road, Brookside Building (HRPC)
Poughkeepsie, NY 12601-1197
Tel: 914-473-7239 Fax: 914-473-3947

E-mail: weighpou@nysnet.net

Southern Weights and Measures Association:

Charles E. (Ed) Coleman
Standards Supervisor
Tennessee Department of Agriculture
Weights and Measures
P.O. Box 40627 Melrose Station
Nashville, Tennessee 37204
Tel: 615-837-5109 Fax: 615-837-5015

Charles Gardner, Committee Safety Liaison, encourages the regional associations to include safety presentations at their meetings. We believe that it is important to make safety information available to all Conference members and interested parties. The "Report of the Task Force on Safety" (1991) is on the NCWM home page under the link "Publications and Programs." This report and others are free and can be downloaded in Adobe Portable Document Format (PDF). This access will make distributing the accident report form throughout the weights and measures community easier. See Item 402-3 for additional information on the NCWM home page.

402-3 I NCWM Internet Home Page

<http://www.nist.gov/ncwm>

The NCWM maintains its home page free of charge on the NIST Office of Weights and Measures (OWM) site. The Committee is working with OWM to expand the variety, scope, and amount of information available on the home page to both publicize the Conference and inform and educate officials, industry, and consumers. For example, OWM has placed the "*Report of the Task Force on Safety*" (1991) and the "*Report of the Task Force on Fraud*" (1988) on the home page under the link "*Publications and Programs.*" Both reports are available at no charge and can be downloaded in Adobe Portable Document Format (PDF).

At the Committee's request, OWM also placed the list of the National Training Program's "*Certified Instructors,*" the "*NCWM Incident/Accident Report Form,*" and the "*Retail Motor-Fuel Program Self-Assessment Checklist*" on the home page so that these documents can have the widest possible distribution. The Committee is also investigating adding links to noncommercial sites that provide safety information (e.g., material safety data sheets), State and Federal laws and regulations, and home pages of State and local weights and measures offices.

At the 85th Annual Meeting, the NCWM indicated that it will host its own home page in the near future.

403 Education

403-1 I National Training Program

During the 2000 Interim Meeting, the A&P Committee began to implement the Training Delivery Plan adopted by the membership at the 84th Annual Meeting.

The new training plan included procedures as follows:

- Identify training courses to be offered.
- Update and maintain training materials.
- A process to classify trainers as certified or qualified to deliver training.
- A process for ongoing quality assessment and improvement.

One of the historic problems for the National Training Program is how to pay for developing and distributing training materials and for presenting an ample number of courses to meet the training needs of officials and service industry personnel. We believe that obtaining long-term and adequate funding for the National Training Program should be one of the Board of Director's highest priorities. We encourage the Board to work closely with the Legislative Liaison Committee and NIST to obtain Congressional funds to support this important effort.

At the 85th Annual Meeting the A&P Committee met with the NCWM Board of Directors. The Board asked the A&P Committee to do the following: (1) re-focus its goals; (2) develop minimum criteria needed for an inspector to successfully perform specific weights and measures functions; and (3) develop a mechanism for evaluating whether the criteria have been met. The Board indicated that it would look to the professionals to develop the training materials.

The presentation on the progress toward implementing the new National Training Plan that was originally scheduled for the Annual Meeting was cancelled due to the new direction given the Committee.

Following is the National Training Plan as previously developed by the A&P Committee. A summary of the activity of the National Training Program can be found in Appendix C of this Report.

Trainer Subcommittee

One of the new proposals in the plan involved appointing a permanent Trainer Subcommittee to act as an advisory group to address training issues. The Subcommittee would determine training needs, select training courses to be presented, update existing training materials, and develop new training materials and courses as needed. The members of the Trainer Subcommittee would include representatives from the following groups: one experienced trainer from each regional weights and measures association, one industry member from weighing, one from measuring, and one from the packaging sector, and a NIST Technical Advisor. The Committee recommends that appointments to the Subcommittee be for a period of 5 years.

Administration and Public Affairs Committee

The Committee agreed that appointing highly qualified members to the Subcommittee is one of the most important components of a viable training program. It also believes that the group must meet regularly (at least 2 weeks a year) to fulfill its duties, which include updating existing training materials and creating new courses. The success of the Subcommittee depends on available resources. For example, the weights and measures members must have a broad range of related experience, be active and competent trainers, and must have their agency's commitment of work time in which to perform the duties associated with the appointment. The NCWM must pay for travel, meeting, and administrative costs. We have also learned from Associate Membership Committee representatives that some members of the NCWM in private industry face limited or diminished resources and support for participating in extra activities (such as the Subcommittee). Given these realities, we believe that formally establishing the Subcommittee must wait until long-term funding is available to the NCWM to support all participants in this effort. The following budget was requested for the Subcommittee to the Board of Directors:

Training Subcommittee Budget Request to NCWM

1. Travel, hotel, and meal expenses for seven members of the Subcommittee (one official from each of four regional associations and up to three industry representatives). Note: NIST will pay for the technical advisors' expenses. We acknowledge that the estimate is high, but the Subcommittee members may also incur additional expenses in connection with developing and updating training materials. Their individual agencies or companies may not be able to cover these expenses. Subcommittee funds will pay for these expenses.
 - a. Using estimated maximum average cost (up to \$1500 per person) x 7 = \$10,500 per meeting.
 - b. Two meetings a year = \$21,000
2. Estimated annual cost for administrative support from NCWM Headquarters, expenses for meeting rooms, audio-visual equipment, reproduction, shipping, and miscellaneous costs (e.g., providing members with standard computer software to facilitate their work.)
 - a. \$6,000

Total Annual Request for Training Subcommittee: \$27,000

Future Training

The Office of Weights and Measures (OWM) currently has three staff vacancies for positions that support the training program. In addition, OWM's entire training staff is either involved in transferring NTEP administration to the NCWM or in preparing a new edition of NIST Handbook 133. Everyone on the Committee understands that there is always more work to do than time and people to do it. Consequently, the two training classes by OWM, originally scheduled for 2000, were cancelled. We believe that the NCWM membership will agree that both projects, NTEP transfer and Handbook 133, are high priority issues that, when completed, will benefit everyone. So we intend to work with OWM to support them on these projects while encouraging them to continue their training efforts.

The A&P Committee is soliciting ideas on developing a priority list of training for future Instructor Training Courses. If future funding is available, we recommend that NIST present the following schools:

For 2001, Instructor Training Schools be based on NTP Course 303 "Vehicle-Tank Meters" and Course 602 "Commodity Regulations."

For 2002, Instructor Training Schools be based on NTP Course 203 "Medium Capacity Scales" and Course 601 "Checking the Net Contents of Packaged Goods."

We would also like to know how interested the members are in NCWM's developing schools that focus on inspecting and testing taximeters, automatic weighing systems, belt-conveyor scales, railroad scales, and timing devices. Please submit comments to Lynn Sebring at lynn.sebring@nist.gov, or contact Lynn at 301-975-4006.

Funding Request

The A&P Committee asked the Board of Directors to submit a request to NIST asking that OWM receive funds to continue to provide at least two Instructor Training Schools annually.

OWM Instructor Training School Budget Request

1. Travel, hotel, and meal expenses for 25 students.
 - a. Using estimated maximum average cost (up to \$1500 per person) x 25 = \$37,500 per school.
 - b. Two schools a year = \$75,000
2. Estimated annual cost for administrative support, expenses for training rooms, audio-visual equipment, reproduction, shipping, special transportation arrangements, and miscellaneous expenses.
 - a. \$10,000

Total Annual Request to NIST Management for OWM Instructor Training Schools: \$85,000

403-2 I Associate Membership Scholarship Fund

Source: Associate Membership Committee

At the 84th NCWM, the Associate Membership Committee adopted a resolution to award 50 scholarships each in the amount of \$500 for a total of \$25,000. These scholarships were made available to State and local weights and measures jurisdictions to recover costs of inspector training and to regional associations for publishing newsletters. The Associate Membership Committee received a total of 73 scholarship applications this year and awarded scholarships to 3 regional and 1 State association, and 18 State and local jurisdictions.

The funds were to be used to support newsletters for several regional associations and provide training in subjects ranging from test procedures for LPG-measuring devices to the National Type Evaluation Program. See Appendix B for a detailed list of the recipients and the type of training or education that will be provided from these funds. We thank the Associate Membership Committee for their generous support of weights and measures training programs and education.

At the 85th Annual Meeting, the Committee was informed that no funds are available for scholarships for the fiscal year 2001 (see Item 101-5 in the Board of Directors report for additional information).

403-3 I NCWM Certified Instructors

The A&P Committee began implementing (see 404-1) new criteria to certify trainers as part of the Training Delivery Plan that was adopted at the 84th NCWM Annual Meeting. As mentioned in 403-1, the revision of NCWM Publication 11, "*National Training Program*," to incorporate the provisions of the new training plan implementing the new standards will not be made until the Committee develops the criteria for training as directed by the Board.

The training plan adopted in 1999 requires that National Training Plan Certified Instructors meet the following criteria:

- a. Complete a "Train the Trainer" course or program on adult training delivery of at least 16 hours in length approved by the A&P Committee or the Trainer Subcommittee or possess a teaching certificate or degree from an accredited educational institution;
- b. Receive a certificate of completion of an OWM Instructor Training Course in a particular subject area. Once a person is a Certified Instructor in any NTP course or subject, certification in additional courses requires participation in an OWM Instructor Training Course for those specific subjects with the required prerequisites or through documented competency in the specific subject area and approval of the A&P Committee.
- c. Plan and present the subject course in a classroom setting with sufficient notice given to the Committee to allow for an evaluation process to be established;
- d. Submit to the NCWM A&P Committee the NTP training evaluation forms which participants complete (Student Evaluation Forms);
- e. Maintain an overall evaluation by the student participants of "Above Satisfactory" as well as the same evaluation by the Committee using the established evaluation process to be recertified.

- f. Be recertified every 5 years. A Certified Instructor will be evaluated every five years to insure that each instructor maintains the necessary training skills necessary to effectively deliver and train in each subject area. A Certified Instructor who has not conducted training during the past five-year period or does not meet the standards established by the Committee will lose certification.

Trainers currently certified under the original NCWM Certified Instructor requirements will be automatically qualified under the new requirements. With the adoption of this plan, currently registered Certified Instructors will be subject to the same five-year review of their certification. For a Certified Instructor to receive recognition in a new NTP course or subject, he/she must participate in an OWM Instructor Training Course for the specific subject or through documented competency in the specific subject area and receive approval of the A&P Committee. Each Certified Instructor must continue to adhere to the standards set for Certified Instructors and NCWM-sanctioned training delivery.

We encourage each regional association to sponsor a Train-the-Trainer Class so potential certification candidates can meet the first requirement. NCWM Certified Instructors may be available to assist weights and measures jurisdictions in training. A list of the currently certified NTP Instructors and the courses they teach is available on the Internet at <http://www.nist.gov/ncwm> or from the OWM's Fax-on-Demand System at 1-800-925-2453. (Request document 302.) Please contact the instructors directly.

403-4 I Education Sessions – 2000 Conference

Source: A&P Committee

The A&P Committee sponsored presentations on the following topics during the 85th NCWM Annual Meeting in 2000.

1. Presentation on the "Retail Motor Fuel Program Self-Assessment Checklist" developed by the Voluntary Program Assessment Working Group – Sid Colbrook (IL) and Ross Andersen (NY).
2. Presentation on "Using the Internet to Publicize Weights and Measures Programs" – Amy Kiernan, Public Affairs Director, and David C. Frieders, Director, San Francisco County Department of Consumer Assurance.
3. Presentation on "Electronic Carcass Evaluation Equipment" – Duane Short, Agricultural Marketing Specialist, U.S. Department of Agriculture, Grain Inspection, Packers & Stockyards Administration (GIPSA), Des Moines, IA.

403-5 I Service Personnel Training

Source: Gordon Johnson, Marconi Commerce Systems Inc.
Debbie Joines, Gasoline Pump Manufacturers Association

Background: Gordon Johnson and Debbie Joines requested that the NCWM sponsor educational programs for device service personnel similar to training provided to regulatory officials. They recommended that States consider making the training mandatory for registered service personnel who perform official tests. The Committee worked with Ms. Joines and Mr. Johnson to develop ways for delivering uniform training to service personnel.

The Gasoline Pump Manufacturer's Association (GPMA) developed a course entitled "Service Technicians and Weights and Measures Requirements." Debbie Joines, GPMA Chairman, presented the course. The course included guidelines for organizing a class, background on legal and technical requirements, and test procedures. The course's format allows the instructor to customize the presentations to reflect local weights and measures requirements regarding equipment repair and recalibration and notification. GPMA estimates that the complete one-day course can be presented in six hours of classroom work.

The Committee commented on the outline, suggested some editorial and technical amendments, and recommended that GPMA test it by presenting a class for several service technicians following the Interim Meeting in January 2000. One class was presented in Illinois. To obtain a copy of the latest draft, contact Mike Gallo, Wayne Division, 124 West College Ave, Salisbury, MD 21804, by e-mail at mike.gallo@waynesby.com, or by telephone at 410-546-6600.

404 Public Affairs

404-1 I Weights and Measures Week 2001

The Committee has not yet developed a theme for Weights and Measures Week 2001. As soon as a theme is selected, it will be posted on the NCWM website.

404-2 I National Consumer Protection Week 2000

Source: Kathleen Thuner, San Diego County, California, and David Frieders, San Francisco City and County

February 14-20, 2000, was designated National Consumer Protection Week to highlight national consumer protection and education efforts. The theme was “*Armchair Armor: Shopping Safely from Home.*” Shopping from home offers choice and convenience, but consumers need to know the rules and use the tools to protect themselves from fraudulent offers and unsafe products. Shopping from home includes online/e-commerce, telemarketing, mail order, door-to-door sales, yard sales, and flea markets. For information on National Consumer Protection Week, refer to the Internet at <http://www.consumer.gov/ncpw/shopsafe.htm>

Janet Land reported to the Committee that the National Association of Consumer Agency Administrators (NACAA), which sponsors National Consumer Protection Week in conjunction with the Federal Trade Commission, the American Association of Retired Persons, the National Consumer League, the Consumer Federation of America, the U.S. Postal Inspection Service, and the National Association of Attorneys General, had not decided on a consumer theme for 2001 by the NCWM 85th Annual Meeting. She will notify the Committee as soon as she is informed of the theme.

The A&P Committee believes that weights and measures officials and the NCWM need to promote the roles they play in consumer protection. This can be achieved in conjunction with National Consumer Protection Week activities and through closer cooperation with NACAA. David Frieders, San Francisco City and County, volunteered to serve as co-liaison representative to NACAA from the NCWM.

404-3 I Promoting Weights and Measures in the United States

Informational Materials Displayed at Annual Meeting

The A&P Committee invited jurisdictions and regional associations to share public information and meeting announcements at the 85th NCWM Annual Meeting. Materials were displayed on a table in the reception area. The top three presenters received awards, and the fourth place winner received Honorable Mention. The articles were judged for creativity, appearance, and value for public.

404-4 I Publicity for the 85th NCWM Annual Meeting

The A&P Committee offered assistance to the State of Virginia to publicize the 2000 NCWM Annual Meeting to be held July 16-20, 2000, at the Omni Hotel in Richmond, VA. No assistance was needed.

404-5 I Participating in the NIST 100th Anniversary Celebration

In 2001, the National Institute of Standards and Technology (NIST) will celebrate its Centennial. The theme is “NIST – First Century of Service to the Nation.” The 86th Annual Meeting of the NCWM will be held in Washington, D.C., to allow meeting participants to attend the Centennial functions. The A&P Committee proposed to the Board of Directors that the NCWM present a commemorative 100th birthday plaque to the Secretary of Commerce and the NIST Director during a NIST tour that can be coordinated with a Conference outing.

Submit ideas for ways in which NCWM can contribute to the celebration of NIST’s Centennial to Lynn Sebring by e-mail at lynn.sebring@nist.gov or by telephone at (301) 975-4006.

J. Flanders, Georgia, Chairman
D. Frieders, San Francisco County, California
L. Greenleaf, New Jersey
S. Hadder, Florida

Administration and Public Affairs Committee

Associate Membership Committee Representative: Robert Fuehne, Ralston Purina
C. Gardner, Suffolk County, New York, Safety Liaison

L. Sebring, NIST Technical Advisor
J. Land, NIST Technical Advisor

Committee on Administration and Public Affairs

Appendix A

**NCWM Voluntary Program Assessment Work Group
Administrative Responsibilities Evaluation Checklist
Retail Motor Fuel Inspection Programs**

February 7, 2000

Jurisdiction: _____ Director Name: _____

Numbered items in normal text are the requirements. The standard to assess compliance with the standard is written immediately after the requirement in *italic type* in the form of questions. For each requirement, circle Yes or No, or NA if not applicable to answer the questions. The NA option may not be available for all questions. For each "No" circled, identify the requirement number and provide and explanation on a comment sheet. Also use the comment sheet to make other notes regarding your findings.

Items with an asterisk "*" after the number indicate non-critical program areas. A "No" or "NA" response for one of these items will not be considered a critical program deficiency.

1. Provide Legal and Financial Basis for Inspection Program		
<i>Are laws enacted or regulations promulgated pursuant to procedures of the jurisdiction in the following areas? Sections taken from, or based on, Handbook 130 for each item below may be used to document compliance. Jurisdictions may also have unique wording to meet special needs.</i>		
1.1	Law enacted specifying authority to inspect and test devices, authorizing access to premises, etc. <i>Do inspectors have legal power to enter commercial establishments and conduct inspections (See Handbook 130 Weights and Measures Law Section 12)?</i>	Yes No
1.2	Law enacted specifying power to promulgate regulations to give full effect to the law. <i>Does the Director (or agency head) have authority to promulgate regulations (See Handbook 130 Weights and Measures Law Section 12)?</i>	Yes No
1.3	Law enacted specifying enforcement tools. <i>Do inspectors have authority to issue condemnation and stop-use orders?</i> <i>Does the Director have authority to cite penalties, prosecute violators, and/or employ other enforcement tools (See Handbook 130 Weights and Measures Law Section 13)?</i>	Yes No Yes No
1.4*	Regulations in place setting frequency of inspection for devices. <i>Is a regulation or are procedures in effect setting frequency of inspection for commercial devices?</i>	Yes No NA
1.5	Regulations in place promulgating current version of Handbook 44. <i>Is a regulation in effect adopting the current version of NIST Handbook 44?</i>	Yes No
1.6	Regulations in place requiring NTEP Certificate of Conformance for devices used or sold for use in commerce. <i>Is a regulation in effect that requires that a device be traceable to a Certificate of Conformance, or otherwise approved by the jurisdiction (See Handbook 130 National Type Evaluation Regulation)?</i>	Yes No
1.7*	Regulations in place to register service persons and define duties and responsibilities for service persons. <i>Is a regulation in effect authorizing the Director to register servicepersons?</i> <i>Does the regulation in effect define qualifications, duties and responsibilities of servicepersons (See Handbook 130 Voluntary Registrations of Servicepersons Regulation)?</i>	Yes NA Yes No NA (Use NA only if NA above)
2. Define Program Goals and Performance Standards		
<i>The jurisdiction may use a combination of documents (Law, Regulations, Quality Manual and/or other documents) to set goals and standards.</i>		
2.1	Management organizes the staff with defined areas of responsibility (both	Yes No

	program areas and geographical territories or zones) and defined levels of supervision. <i>Is the jurisdiction organized as recorded on an organizational chart for inspection functions, including administration, support staff, and field inspection staff?</i>	
2.2*	Management maintains current job descriptions for each title/position. <i>Does the jurisdiction have written job descriptions describing duties and minimum qualifications for all positions?</i>	Yes No
2.3	Management defines program goals. <i>Are both general goals for the overall program as well as specific goals for individual projects defined in writing? Some goals will be defined in law and regulation, while most are administrative in nature.</i> <i>Can the Director identify examples and explain the process by which goals are set?</i>	Yes No Yes No
2.4*	Management maintains a performance evaluation program for all staff. <i>Are periodic performance evaluations conducted for each employee? Evaluations must include performance goals and standards, must identify training needs and must provide feedback to the employee?</i>	Yes No
2.5*	Management defines performance standards for registered serviceperson programs. <i>Are minimum performance standards established for registered servicepersons?</i> <i>Can management provide examples of how serviceperson performance is measured and describe how the program ensures that servicepersons are meeting their responsibilities? Management may use qualifying exams, follow-up inspections, etc.</i>	Yes NA Yes No NA (Use NA only if NA above)

3. Define Inspection and Test Procedures <i>The jurisdiction may use a combination of documents (Quality Manual, NCWM Publication 12 EPO's, and/or other manuals to define procedures.</i>		
3.1	Management defines minimum inspection procedures in writing for each inspection discipline. <i>Are written procedures in place to set minimum inspection criteria (refers to specifications, user requirements, labeling or markings, etc.) to be applied for each device inspected (See Section 3.2 for testing)? Procedures may be in the form of NIST Handbooks, EPO's (NCWM Publication 12) or may be specific guidance documents.</i>	Yes No
3.2	Management defines minimum test procedures in writing for each inspection discipline. <i>Are written procedures in place to prescribe minimum tests (refers to examination of a device, package or practice for conformance with the tolerances and other applicable performance standards) to be applied to each device tested? Procedures may be in the form of NIST Handbooks, EPO's (NCWM Publication 12) or may be specific guidance documents.</i>	Yes No
3.3	Management defines procedures for use in complaint and/or undercover investigations. <i>Are written procedures in place to prescribe procedures and techniques for complaint and/or undercover investigations?</i>	Yes No

3.	Management defines enforcement procedures. <i>Are written procedures in place for initiating enforcement actions?</i>	Yes No
4.	<i>Do those procedures identify what actions are available and when they are to be used (stop-use and condemnation orders, warning letters, penalties, or prosecution)?</i>	Yes No
	<i>Do the procedures identify the forms used, the legal filing procedures, procedures for scheduling reinspections, etc.?</i>	Yes No
	<i>Do the procedures include "Due Process" provisions?</i>	Yes No

4. Provide Training for Each Inspector or Supervisor		
<i>Jurisdictions may use completion of the NTP courses as evidence of compliance in this area. For each item, can management provide documentation of training provided to each staff member?</i>		
4.1	Management provides training on law and regulations. <i>Was training provided?</i>	Yes No
4.2	Management provides training on organization and use of NIST Handbook 44. <i>Was training provided?</i>	Yes No
4.3	Management provides training on NTEP and use of Certificates of Conformance. <i>Was training provided?</i>	Yes No
4.4	Management provides training on safety. <i>Was training provided?</i>	Yes No
4.5	Management provides training on appropriate inspection and test procedures. <i>Was training provided?</i>	Yes No
4.6	Management provides training on use and care of standards. <i>Was training provided?</i>	Yes No
4.7	Management provides training on completion and processing of report forms. <i>Was training provided?</i>	Yes No
4.8	Management provides training on completion and processing of official orders. <i>Was training provided?</i>	Yes No
4.9	Management provides training on conduct of complaint and undercover investigations. <i>Was training provided?</i>	Yes No
4.10	Management keeps records of training provided to each inspector. <i>Are records of training maintained for each staff member, ranging from trainer logs, to attendance lists, to a database?</i>	Yes No
	<i>Are records in a form that can be accessed to assist in identifying training needs?</i>	Yes No

5. Provide Inspection Staff with Appropriate Reference Standards and Test Equipment		
<i>Is each inspector equipped with the necessary equipment and reference materials to conduct the inspections and tests specified for each inspection discipline?</i>		
5.1	Management provides current versions of Law and Regulations. <i>Are copies provided?</i>	Yes No
5.2	Management provides current version of Handbook 44. <i>Are copies provided?</i>	Yes No
5.3	Management provides current version of written procedures, Quality Manual, EPO's, program directives, etc. <i>Are copies provided?</i>	Yes No

5.4	Management provides inspectors with access to NTEP Certificates of Conformance. <i>Can each inspector get access to the information in the Certificate of Conformance for a device? Access may range from a copy of the certificate (Publication 5) to contact with another person who has a copy.</i>	Yes No
5.5	Management provides necessary standards and test equipment. <i>Is each inspector provided with test measure(s), certified by a NIST traceable laboratory, which is(are) appropriate for the task, including capacity (5 gallons for flow rates up to 20 GPM or equivalent of one minute at maximum flow for rates 20 GPM and over)?</i> <i>Is each inspector issued other associated test equipment appropriate for the task (e.g., tape measure for hose length)?</i>	Yes No Yes No NA
5.6	Management provides necessary support equipment. <i>Is each inspector provided with additional support equipment to conduct proper tests (e.g., a metal funnel with a non-sparking outlet), seals, including security seals and approval seals, seal press, other equipment (e.g., calculator, level and other hand tools, etc.)?</i>	Yes No
5.7	Management provides inspectors with current versions of inspection reports, worksheets, and other forms. <i>Is each inspector provided with current versions of inspection reports, worksheets, and other forms?</i>	Yes No

6. Provide a Safe Working Environment		
6.1	Jurisdiction has a written safety program or policy. <i>Does the jurisdiction have a policy, reflecting current federal and state laws, regarding worker safety? Documentation may be in the Quality Manual, or may be in other documents such as state worker safety rules or federal OSHA standards.</i>	Yes No
6.2	Management actively promotes safety in all activities. <i>Is "Safety first" thinking integrated in all management programs including training, supervision, performance evaluation, etc.?</i> <i>Are safety issues presented in training for each inspection area?</i> <i>Are supervisors required to evaluate inspector implementation of safety policies?</i> <i>Does management include safe practices as standards in inspector performance evaluations?</i>	Yes No Yes No Yes No Yes No
6.3	Management issues personal protective equipment and other safety equipment to each inspector. <i>Has safety equipment been issued as necessary for each inspection discipline (See standards and equipment section for each device type)?</i>	Yes No NA

7. Provide Record Keeping Systems to Record and Evaluate Program Progress		
7.1	<p>Management designs appropriate report forms to collect data to support the enforcement programs. (Check each box below as appropriate)</p> <p><i>Does the form provide space to record the following general information?</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> Form title, number and revision date. <input type="checkbox"/> Agency name, address and phone number. <input type="checkbox"/> Inspection number that uniquely identifies the inspection. <input type="checkbox"/> Inspection date. <input type="checkbox"/> Name, address and phone number of establishment inspected. <input type="checkbox"/> Remarks area for official comments and summary of inspection and test results. <input type="checkbox"/> Signature of inspector. <input type="checkbox"/> Optional: Signature of establishment representative. <input type="checkbox"/> Optional: Type of inspection, routine, reinspection, investigation, etc. <input type="checkbox"/> Optional: Zone or territory where establishment is located. <input type="checkbox"/> Optional: Classification of the establishment. <input type="checkbox"/> Optional: Brand affiliation of establishment. <p><i>Does the form provide space to record the following specific information for each device inspected?</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> Manufacturer, model and serial number of the device inspected. <input type="checkbox"/> Size of the test draft(s) used in the tests. <input type="checkbox"/> Tolerance applied, acceptance or maintenance. <input type="checkbox"/> As-found error, normal test. (Maximum discharge rate) <input type="checkbox"/> As-found error, special test. (Minimum discharge rate) <input type="checkbox"/> Final error, normal test, if different from the as-found error. <input type="checkbox"/> As-found and final compliance of the device. May be P/F or narrative. <input type="checkbox"/> Optional: NTEP CC number for new devices. <input type="checkbox"/> Optional: Results of other tests (e.g., anti-drain valve, RFI/EMI, zero-setback interlock, price computation, etc.) <input type="checkbox"/> Optional: User identification of the device inspected. <input type="checkbox"/> Optional: Type or grade of product dispensed. <input type="checkbox"/> Optional: Unit price of product and value of any shortage or overage. 	<p>Yes No NA</p> <p>Yes No NA</p>
7.2	<p>Supervisors review and/or verify inspection reports of subordinates. Do supervisors review inspection reports and/or conduct follow-up inspections to evaluate inspector performance and identify potential problems?</p> <p><i>Is this responsibility written in the performance evaluation program of each supervisor?</i></p>	<p>Yes No</p> <p>Yes No</p>
7.3	<p>Management collects inspection reports at a central location(s) for electronic data entry and/or filing. <i>Is an organized filing system in place to retain official records?</i></p> <p><i>Is the filing system documented and can authorized staff find and retrieve records as needed?</i></p>	<p>Yes No</p> <p>Yes No</p>
7.4*	<p>Management has an established record retention program and archiving procedure. <i>Are record retention periods established for each type of record and are archiving procedures documented in writing?</i></p>	<p>Yes No</p>

8. Take Action on Violative Inspection Results		
8.1	Agency takes appropriate enforcement actions against violators. <i>Does management have records of enforcement actions taken?</i>	Yes No
	<i>Can management provide examples of how enforcement procedures were used at all levels (i.e., from field inspector issuing stop-use orders to management citing penalties, rescinding licenses, or initiating prosecutions)?</i>	Yes No

9. Program Review and Improvement		
9.1	Management evaluates program effectiveness at all levels. <i>Does management have a documented review program to evaluate program effectiveness on a continuous and/or annual basis?</i>	Yes No
	<i>Can management provide examples of the process and provide examples of changes that have been made to the laws or regulations, program goals and standards, inspection/test procedures, training program, inspection/test equipment, safety program, record keeping, and/or enforcement procedures?</i>	Yes No
9.2*	Management reaches out to consumers and industry to promote the program and encourage compliance at all levels. <i>Can management describe examples of outreach programs directed at regulated parties?</i>	Yes No NA
	<i>Can management describe examples of outreach programs directed at servicepersons?</i>	Yes No NA
	<i>Can management describe examples of outreach programs directed at consumers?</i>	Yes No NA

Rater: _____

Date: _____

See attached comment sheet.

**NCWM Voluntary Program Assessment Work Group
Administrative Responsibilities Evaluation Checklist
Retail Motor Fuel Device Inspection Programs
February 7, 2000**

Jurisdiction: _____ Director Name: _____

Administrative Responsibilities Comment Sheet

Requirement	Comment

Rater: _____

Date: _____

**NCWM Voluntary Program Assessment Work Group
Inspector Responsibilities Evaluation Checklist
Retail Motor Fuel Dispensers
February 7, 2000**

Inspector Name: _____ Jurisdiction: _____

Numbered items in normal text are the requirements. The standard to assess compliance with the standard is written immediately after the requirement in *italic type* in the form of questions. For each requirement, circle Yes or No, or NA if not applicable to answer the questions. For each "No" circled, identify the requirement number and provide an explanation on a comment sheet. Also use the comment sheet to make other notes regarding your findings.

All items in this checklist indicate critical program areas. Any "No" response represents a critical program deficiency.

1. The Inspector is Trained.		
<i>Can each inspector cite references relating to the following areas and correctly answer questions (i.e., assessor may use review and exam questions from NTP courses) in each area?</i>		
1.1	The inspector has knowledge of program goals and objectives.	Yes No
1.2	The inspector has knowledge of the pertinent laws.	Yes No
1.3	The inspector has knowledge of the pertinent regulations.	Yes No
1.4	The inspector has knowledge of Handbook 44.	Yes No
1.5	The inspector has knowledge of NTEP and a Certificate of Conformance.	Yes No
1.6	The inspector has knowledge of the prescribed inspection and test procedures for the devices.	Yes No
1.7	The inspector has knowledge of safety issues and practices associated with device and products tested.	Yes No
1.8	The inspector has knowledge of the proper use and care of the standards and equipment.	Yes No
1.9	The inspector has knowledge of the prescribed procedures for complaint and undercover investigations.	Yes No NA

2. The Inspector is Prepared to Perform Inspections.		
<i>Does the inspector have the following reference items at his/her disposal at the inspection site(s)?</i>		
2.1	The Inspector has appropriate credentials.	Yes No
2.2	The Inspector has copies of pertinent laws, regulations and reference books. <i>Does inspector have current copies of law, regulations, Handbook 44, etc.?</i>	Yes No
2.3	The Inspector has NTEP Certificates or has access to them as needed. <i>Can the inspector get access to an NTEP Certificate when needed?</i>	Yes No
2.4	The Inspector has copies of testing procedures. <i>Does inspector have copies of procedures (NCWM Publication 12 and/or Jurisdiction Quality Manual)?</i>	Yes No
2.5	The Inspector has necessary report forms, worksheets, and official orders. <i>Does the inspector have copies?</i>	Yes No

3. The Inspector has Necessary Equipment to Perform Tests.		
<i>Does the inspector have the following test equipment and supplies at his/her disposal at the inspection site(s)?</i>		
3.1	Inspector has appropriate standards. <i>Are the test measures certified traceable to NIST and appropriate in capacity and division size?</i>	Yes No
	<i>Are the test measures in good condition (i.e., clean and free of dents, clear sight tube, etc.) and protected while not in use (case or enclosure)?</i>	Yes No
	<i>Does the inspector have other necessary standards (e.g., tape measure)?</i>	Yes No N/A
3.2	Inspector has support equipment including means to return product to proper storage. <i>Does the inspector have appropriate equipment at the site (funnel, hoses, etc.)?</i>	Yes No
3.3	Inspector has safety equipment. <i>Does the inspector have appropriate safety equipment (safety cones, splash covers, protective gloves, etc.)?</i>	Yes No
4. Inspector Conducts Inspections and Tests.		
4.1	Preliminary steps. <i>Does the inspector identify him/herself to establishment manager and explain purpose of inspection (routine, complaint, etc, but not applicable for undercover investigations)?</i>	Yes No
	<i>Does the inspector explain the manager's responsibilities (access to dispenser interior, audit trails, etc.)?</i>	Yes No
	<i>Does the inspector identify appropriate product storage markings and verify ability to return product to storage?</i>	Yes No
4.2	Inspector inspects each dispenser. <i>Does the inspector:</i> <ul style="list-style-type: none"> • Check suitability? • Check that device has valid NTEP Certificate of Conformance? • Check that devices are properly installed (plumb, level, etc.)? • Check for correct pump markings (ID, product identity, etc.)? • Check pump interior for leaks, exposed wiring, modifications, etc.)? • Check security seals/audit trails? • Check condition of hoses and nozzle? • Check condition of vapor eliminator system (pump systems only)? 	Yes No Yes No Yes No Yes No Yes No Yes No Yes No
4.3	Measurement Tests - General. <i>For each test draft, does the inspector:</i> <ul style="list-style-type: none"> • Use the test measure correctly (wet down, level, reading at eye level, 30 second pour/10 second drain, grounding during product return, etc.)? • Verify correct operation of primary and operational displays, and price computations? • Verify correct operation of totalizers? • Safely return product to correct storage tank? 	Yes No Yes No Yes No Yes No
4.4	Conducts Normal Test(s) <i>Does the inspector conduct normal tests on each device?</i>	Yes No
	<i>Does the inspector repeat tests, as required, to verify results?</i>	Yes No
4.5	Conducts Special Test(s) <i>Does the inspector conduct special tests on each device as required?</i>	Yes No
	<i>Does the inspector repeat tests, as required, to verify results?</i>	Yes No

4.6	Conducts other performance tests on each dispenser. <i>Does the inspector conduct anti-drain valve, zero-setback interlock, repeatability, price computation and other performance tests on each device according to jurisdiction guidelines?</i>	Yes No
4.7	Conducts other performance tests on system components, as required. <i>Does the inspector conduct tests of solenoid valves (submersible pump systems only) and verify operation of point-of-sale terminals or consoles (agreement of indications, etc.)?</i>	Yes No
4.8	Inspector looks for unusual situations or potentially fraudulent practices while conducting inspections. <i>Does the inspector look for unusual situations and potentially fraudulent practices? Can the inspector describe the kinds of things he/she is looking for, or examples found in past inspections)?</i>	Yes No Yes No
4.9	Inspector conducts complaint or undercover investigations. <i>Does the inspector conduct assigned investigations as per jurisdictional guidelines and file appropriate reports?</i>	Yes No NA

5. Inspector Completes Inspection		
5.1	Inspector completes the required reports documenting the inspection. <i>Does the inspector complete the inspection report(s) following jurisdiction guidelines? Are compliant devices passed and non-compliant devices failed following jurisdiction guidelines?</i>	Yes No Yes No
5.2	Inspector issues the appropriate directions and orders to the device user. <i>Does the inspector take appropriate enforcement action as per jurisdiction guidelines with respect to failing devices (issuing repair or condemnation orders, etc.)? Does the inspector explain the test results to establishment manager and explain any orders issued? Does the inspector answer questions about the inspection, as needed, following jurisdiction guidelines?</i>	Yes No Yes No Yes No
5.3	Inspector reports unusual situations to superiors and/or conducts further investigations. <i>If a situation arises, does the inspector report to supervisors and/or conduct investigations to verify whether operations are in conformance? Can the inspector describe what form investigations may take and when each would be applied? Does the inspector prepare narrative reports of such findings?</i>	Yes No Yes No Yes No

Rater: _____ Date: _____

Rater should document and explain each deficiency on a separate page along with general comments.

**NCWM Voluntary Program Assessment Work Group
Inspector Responsibilities Evaluation Checklist
Retail Motor Fuel Device Inspection Programs
February 7, 2000**

Jurisdiction: _____ Inspector Name: _____

Inspector Responsibilities Comment Sheet

Requirement	Comment

Rater: _____

Date: _____

Jurisdiction Name
Street Address
City, State, Zip
Phone Number

Form No./Rev Date

Date	Retail Motor Fuel Device Report Form		Test #
Name	Phone	Zone	
Address	Establishment Type	Inspection Type	
City, State, Zip	Product Brand		

1	Pump#	Product	S/gal	Mfr	Model	S/N	Visual Inspection
	Test Draft	Tolerance Applied Maint Accept		Error Normal	Error Special	Error Other	Other Tests Pass Fail
2	Pump#	Product	S/gal	Mfr	Model	S/N	Visual Inspection
	Test Draft	Tolerance Applied Maint Accept		Error Normal	Error Special	Error Other	Other Tests Pass Fail
3	Pump#	Product	S/gal	Mfr	Model	S/N	Visual Inspection
	Test Draft	Tolerance Applied Maint Accept		Error Normal	Error Special	Error Other	Other Tests Pass Fail
4	Pump#	Product	S/gal	Mfr	Model	S/N	Visual Inspection
	Test Draft	Tolerance Applied Maint Accept		Error Normal	Error Special	Error Other	Other Tests Pass Fail
5	Pump#	Product	S/gal	Mfr	Model	S/N	Visual Inspection
	Test Draft	Tolerance Applied Maint Accept		Error Normal	Error Special	Error Other	Other Tests Pass Fail
6	Pump#	Product	S/gal	Mfr	Model	S/N	Visual Inspection
	Test Draft	Tolerance Applied Maint Accept		Error Normal	Error Special	Error Other	Other Tests Pass Fail
7	Pump#	Product	S/gal	Mfr	Model	S/N	Visual Inspection
	Test Draft	Tolerance Applied Maint Accept		Error Normal	Error Special	Error Other	Other Tests Pass Fail
8	Pump#	Product	S/gal	Mfr	Model	S/N	Visual Inspection
	Test Draft	Tolerance Applied Maint Accept		Error Normal	Error Special	Error Other	Other Tests Pass Fail
9	Pump#	Product	S/gal	Mfr	Model	S/N	Visual Inspection
	Test Draft	Tolerance Applied Maint Accept		Error Normal	Error Special	Error Other	Other Tests Pass Fail
10	Pump#	Product	S/gal	Mfr	Model	S/N	Visual Inspection
	Test Draft	Tolerance Applied Maint Accept		Error Normal	Error Special	Error Other	Other Tests Pass Fail

Volume of Product Returned to Storage	Grade/Gal	Grade/Gal	Grade/Gal	Grade/Gal
Remarks				
Acknowledged		Inspected by		

Appendix B
Associate Membership Committee Scholarships 1999-2000

	Requesting Body	Training or Activity to be Provided	Scholarships* Awarded *@ \$500 each	Total Value
1	Alabama	Retail Scales and Package Testing	2	\$1,000
2	Arkansas	NTEP	2	\$1,000
3	Arkansas	Package Testing	1	\$500
4	Colorado	NTEP	1	\$500
5	Georgia	Retail Motor-Fuel Dispenser Testing	1	\$500
6	Georgia	Package Testing	1	\$500
7	Idaho	Retail Motor-Fuel Dispenser Testing	2	\$1000
8	Illinois	LPG Meter Testing	1	\$500
9	Illinois	Small Scale Testing	1	\$500
10	Illinois	Livestock Scale Testing	1	\$500
11	Kern County, CA	Heavy Capacity Scale Testing	1	\$500
12	Kern County, CA	Retail Motor-Fuel Dispenser Testing	1	\$500
13	Louisiana	NTEP	4	\$2000
14	Maryland	Inspector Training	2	\$1000
15	Michigan	LPG Meter Testing	5	\$2500
16	Missouri	Livestock Scale Testing	2	\$1,000
17	Missouri	Package Testing	1	\$500
18	Montana	Retail Motor-Fuel Dispenser Testing	2	\$1000
19	Nevada	Training Equipment	4	\$2000
20	Ohio	Training Materials	1	\$500
21	Pennsylvania	Retail Scales and Motor Fuel Dispenser Testing	2	\$1,000
22	Pennsylvania	Loading-Rack Meter Testing	1	\$500
23	Seattle, WA	Vehicle Scale Testing	2	\$1,000
24	Texas	Inspector Training	2	\$1,000
25	Wisconsin	LPG Meter Testing	3	\$1500
26	Indiana Association of Weights and Measures	NTEP	1	\$500
27	Southern Weights and Measures Association	Newsletter	1	\$500
28	Northeastern Weights and Measures Association	Newslette	1	\$500
29	Central Weights and Measures Association	Newsletter	1	\$500
Totals			50	\$25,000

Appendix C
Certification Summary
(As of June 30, 2000)

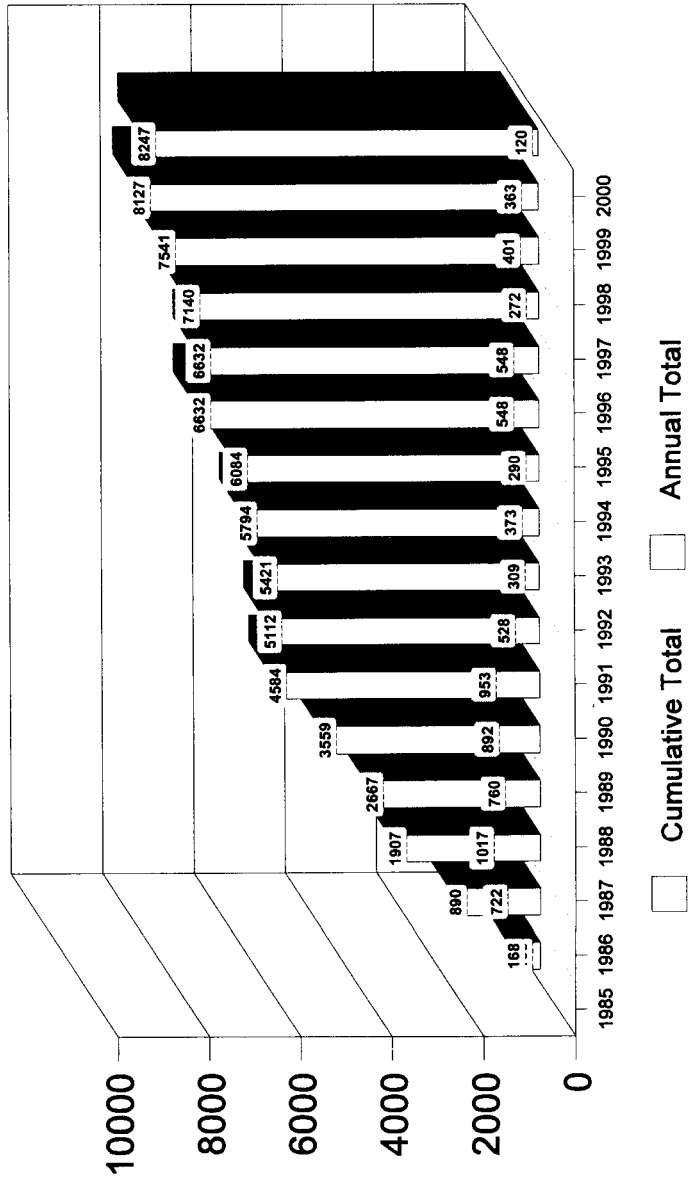
State	Total No. of Certif.	Total No. of People	NTP Course No.										
			Mod 1*	202 Mod 2	203 Mod 4	204 Mod 7	205 Mod 6	206 Mod 5	302 Mod 8	303 Mod 20	304 Mod 19	305 Mod 21	601 Mod 10
AL	43	24		14	12	5			12				
AK	23	13		7				1	10				5
AZ	29	29		28				1					
AR	129	42	20	19		9		10	41	16		2	12
CA	1							1					
CO	7	7				7							
CT	86	30		19	19			2	20	3	6	2	15
DE	5	5											5
DC	4	3							3		1		
FL	113	94	6	8	3	2		7	58	7	6		16
GA	29	24				4		8	17				
HI	105	15		11	12	11	11	11	12	12	12		12
IA	1	1				1							
ID	8	8							8				
IL	17	17		8				9					
IN	154	78		12		17		48	21	21			34
KS	29	16	7	7				5	1				9
LA	9	9				8							1
MD	70	37				6			27	33	4		
ME	3	3				2		1					
MA	1	1							1				
MI	48	20				12		9	6	14		7	
MN	15	15							15				
MO	48	45						4	25				19
MT	7	7				7							
NE	42	19		2		7		7	15				11
NV	13	11		1		1		1	9			1	
NH	32	8	6	5	5			2	6	8			
NM	38	24		9					14			15	
NC	39	35							20				19
ND	3	3							3				
OH	362	132		65	33	29		53	94	52		7	35
OR	54	18	16	15				5	10		1	1	6
PA	133	64		44	4	7		8	27	18			18
PR	91	49		33					33				25
SD	28	13			7			12	8				1
TN	41	30				6		6	29				
UT	83	25	16	17		6		6	15	10		2	11
VT	24	10	4		2	3		6	7		1		1
VI	11	8						6					5
VA	5	5				3						2	
WA	26	21		10					15			1	
WI	4	4										4	
Other													
GIPSA**	48	40				36	6	6					
Total	2072	1075	75	334	97	189	17	236	583	194	31	44	260

* NTP Module 1 was incorporated in Module 2, now Course No. 202 (May 1994)

**USDA Grain Inspection/Packers and Stockyards Administration

Growth of NTP Registry

June 30, 2000



**NATIONAL TRAINING PROGRAM REGISTRY
SUMMARY OF ACTIVITY**

(As of June 30, 2000)

Courses Listed in Registry:

- | | |
|---|--|
| <p>Introductory:Level 100</p> <p>101 Weights and Measures Regulation in the United States
102 Introduction to Handbook 44
103 Introduction to Electronic Weighing and Measuring Systems</p> | <p>Meters: Level 300</p> <p>301 Introduction to Meters (planned)
302 Retail Motor-Fuel Dispensers and Consoles
303 Vehicle-Tank Meters
304 Loading-Rack Meters
305 Liquefied Petroleum Gas Liquid-Measuring Devices</p> |
| <p>Scales: Level 200</p> <p>201 Introduction to Handbook 44 Scales Code (planned)
202 Retail Computing Scales
203 Medium-Capacity Scales
204 Livestock and Animal Scales
205 Meat Beams and Monorail Scales
206 Vehicle and Axle-Load Scales</p> | <p>Measures: Level 400</p> <p>Other Devices:Level 500 (linear, taximeters, etc.)
502 National Type Evaluation Program (NTEP)</p> |
| <p>Commodities:Level 600</p> <p>601 Checking the Net Contents of Packaged Goods
602 Commodity Regulations</p> | |

Individuals Trained - by Course

State	Module	Course Number													Totals		
		Course No. 101 Module 23	Course No. 102 Module 24	Course No. 103 Module 27	Course No. 202 Module 2	Course No. 203 Module 4	Course No. 204 Module 7	Course No. 205 Module 6	Course No. 206 Module 5	Course No. 302 Module 8	Course No. 303 Module 20	Course No. 304 Module 19	Course No. 305 Module 21	Course No. 502 NTEP		Course No. 601 Module 10	Course No. 602 Module 22
AL		12	26	15	12	4	4	32									105
AK		6		7		1	16								12		42
AZ				51		30	1	23				25		17	1		148
AR	20	36		38		8	38	67	17			3		12			239
CA						1	1										2
CO						11		1						1			13
CT				31	20		2	28	6	12	2			18	26		145
DE					1	5			2					5			13
DC	4			4				3				1					12
FL	13	43	41	29	18	10	16	82	8	8				39			307
GA			7		11	4	8	47									77
HI			4	12	12	11	11	12	11	12	11	12		24	6		127
ID			8	9		11	46	21			12			11	10		128

Individuals Trained - by Course

State	Module #	Course Number													Totals			
		Course No. 101 Module 23	Course No. 102 Module 24	Course No. 103 Module 27	Course No. 202 Module 2	Course No. 203 Module 4	Course No. 204 Module 7	Course No. 205 Module 6	Course No. 208 Module 5	Course No. 302 Module 6	Course No. 303 Module 20	Course No. 304 Module 19	Course No. 305 Module 21	Course No. 502 NTEP		Course No. 601 Module 10	Course No. 602 Module 22	
IL					8	1	2	6	9	23					1	2	1	53
IN		48	48	48	56	46	20	65	104	44					2	37	27	497
IA					10		5	9	17	4						9	2	56
KS	9	3	8	8	10	14	6	6	18	2						32		108
KY	8				8	1		5	19							16		57
LA					8											1		9
ME			4			3	2	11	14									40
MD		6			29		6		28	33						4		110
MA			12	23	4			7	41	31						3	1	128
MI		94	53	50			21	2	38	8						29		340
MN							2		12							2	3	20
MS						2	3	3	2									10
MO	3	63	22			13	2	8	44							27		182
MT						5	7	10	6									37
NE		20	27		17	4	7	14	30	35						2	15	220
NV		11	8		1		1		1	12						1		35
NH	6		6	5	5	7		3	7							2		44
NJ			172	21	21				108	109								431
NM					20		13		32							25		114
NY					74													175
NC							2		18							19	16	57
ND								2	3									21
OH		63	129	145		91	45	4	75	178						56	12	961
OK			17	2		2		4	5							22		52
OR	18	23	16	17			12	8	24	13						23	19	196
PA	34	27	82	163	51		8	14	152	25						58	19	634
PR		38	20	32					33							24		147
RI					1			1										3
SC					25		2		28									55
SD			10			7	10	12	8							10	10	68
TN			5	27			6	6	32									76

Individuals Trained - by Course

State	Course Number													Totals			
	Module 1***	Course No. 101 Module 23	Course No. 102 Module 24	Course No. 103 Module 27	Course No. 202 Module 2	Course No. 203 Module 4	Course No. 204 Module 7	Course No. 205 Module 6	Course No. 302 Module 5	Course No. 302 Module 8	Course No. 303 Module 20	Course No. 304 Module 19	Course No. 305 Module 21		Course No. 302 NTEP	Course No. 601 Module 10	Course No. 602 Module 22
TX		5			25	8			12	24			4			78	
UT	17	7	18	17	22	14	17		12	19	10		2	20		165	
VT	6		5			3	3		9	11		1				43	
VI	5								6	6						23	
VA	39	10	43			5		16	26	25			4	38		230	
WA	13	12	16		13	16		18	21				3	10	14	122	
WV						3										3	
WI	56	25	65		61	31		40	40	26			15	43		381	
WY		11	3						18				16			60	
Other																	
Associate Members			3			1			1	6		8	14	10		43	
FGIS ¹																13	
GIS ²						36	11		5							55	
Total Trained	204	129	608	895	1065	398	382	59	559	1501	458	65	224	15	781	179	7520
% of Total Certified	37%	N/A	N/A	N/A	32%	27%	54%	36%	42%	44%	42%	57%	23%	N/A	31%	NA	39%

* Federal Grain Inspection Service
 ** USDA Grain Inspection/Packers and Stockyards Administration
 1 A total of 2072 Certificates have been awarded to 1,975 individuals under the NTP Certification Program.
 ***Module 1 was incorporated in Course 202 in 1994.

**NATIONAL TRAINING PROGRAM REGISTRY
SUMMARY OF METROLOGY SEMINAR ACTIVITY**

(As of June 30, 2000)

Courses Listed in the NTP Registry:

No. 201, Basic Metrology I
No. 202, Basic Metrology II

No. 203, Intermediate Metrology
No. 204, Advanced Metrology

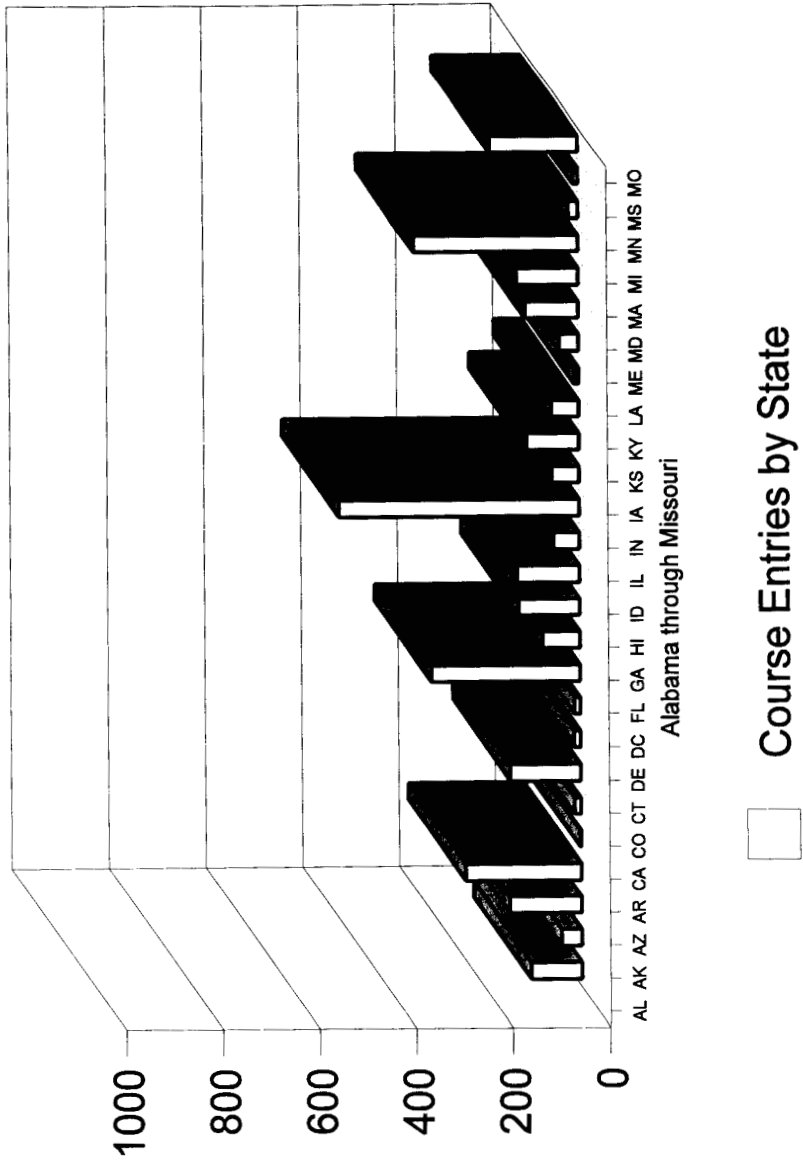
Individuals Trained by Course					
State	Course No.				Totals
	201	202	203	204	
AL		1			1
AK	1	2	2		5
AZ	3	3	3	1	10
AR			1		1
CA	1	1	4	1	7
CO	2	2	1		5
CT			2		2
DE	1	1	2	1	5
FL	4	4		1	9
GA	1	1	1		3
HI	2	2			4
ID	1	1	1		3
IL	5	4	3		12
IN	1	1	2		4
IA	1	1	1		3
KS	2	2	2	1	7
KY	2	2			4
ME	4	4	1		9
MD	8	8	8		24
MA	1	1			2
MI	1	1	3		5
MN	1		3	1	5
MS	2	2	3		7
MO	2	2	1		5
NE			3		3
NV	1	1			2

Administration and Public Affairs Committee

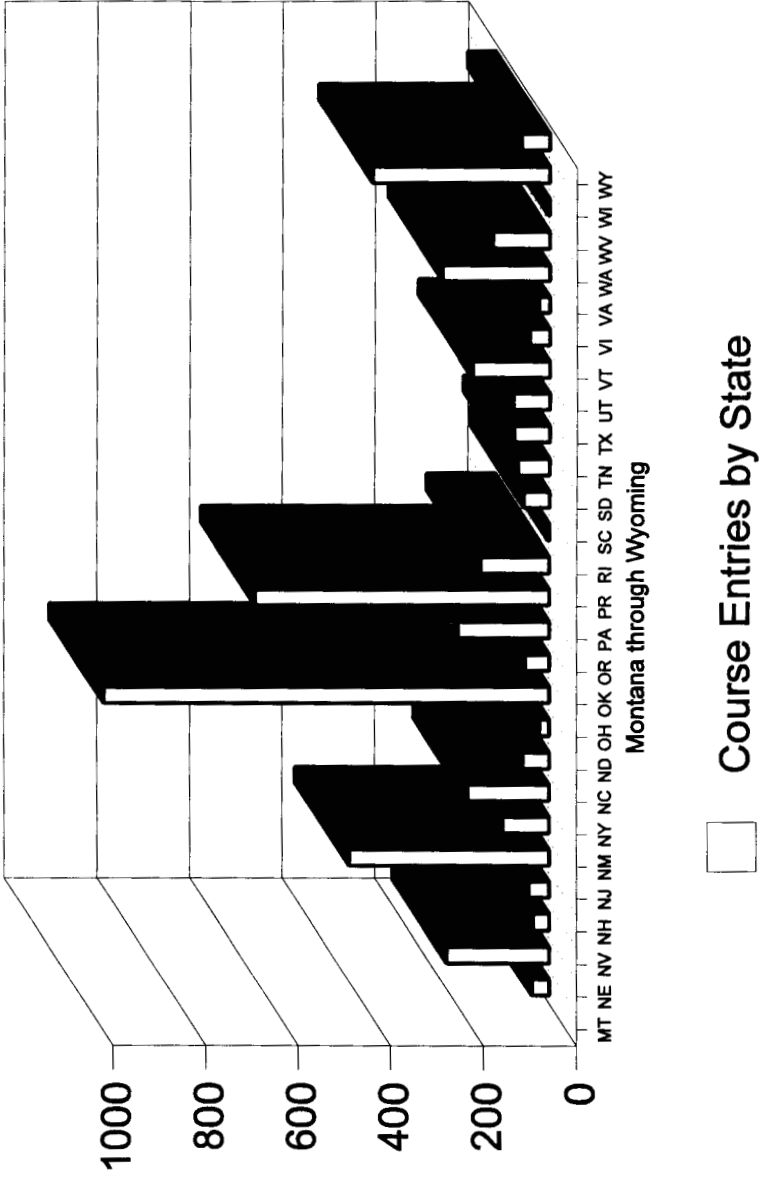
Individuals Trained by Course					
	Course No.				
State	201	202	203	204	Totals
NH	1	1	1		3
NJ			1		1
NM	1	1	1		3
NY	2	2	2	1	7
NC	10	7	4	2	23
ND	2	2	2		6
OH	2	2	1		5
OK			1	2	3
OR	1	1		1	3
PA	1	1	2		4
PR	3	3	5		12
RI	1	3			4
SC	2	2	1		5
SD	1	1			2
TN	3	3	1		7
TX	3	3	3		9
UT		1			1
VT			1		1
VA	4	4	3		11
WA	1	1	2	1	5
WV	3	3	2		8
WI			2		2
Other					
Canada			2		2
Associate Members	99	18	37	41	180
GIPSA	6	1			7
Totals	193	107	125	36	461

NTP Registry Activity by State

As of June 30, 2000



NTP Registry Activity by State
As of June 30, 2000



Continuing Education Units (CEUs/NCWM EUs) Awarded*
By the National Conference on Weights and Measures
(As of June 30, 2000)**

Module Number	NCWM EUs /CEU's **	No. of Participants	1985 Total	1986 Total	1987 Total	1988 Total	1989 Total	1990 Total	1991 Total	1992 Total	1993 Total	1994 Total	1995 Total	1996 Total	1997 Total	1998 Total	1999 Total	2000 Total	Grand Total
1	3.1	204		306.90	77.50	117.80	99.20	24.80		3.10	3.10								632.40
2	3.1*	1072		65.10	857.90	759.50	173.60	244.90	31.00	297.60	3.10	12.40	164.30	24.80	161.20	204.60	164.30	55.80	3230.10
4	3.1	385				492.90	198.40	170.50	145.70			74.40	89.90	75.60	263.50	99.20	40.30		1233.80
5	3.1	553			96.10	133.30	381.30	217.00	220.10	18.60	52.70	55.80	89.90	75.60	263.50	99.20	18.60		1721.70
6	3.1	48			12.40			55.80		15.50	6.20		31.00		27.90		34.10		182.90
7	3.1	348			12.40		248.00	117.80	80.60	80.60	130.20	43.40	179.80	99.20	12.40	74.40	49.60	55.80	1184.20
8	2.8	1403		288.40	856.80	260.40	739.20	324.80	112.00	156.80	252.00	50.40	170.80	215.60	98.60	280.00	313.60	84.00	4202.80
10	2.8	759		372.40	302.40	128.80	417.20	120.40	148.40	123.20	177.20	27.70	16.80	39.20	53.20	95.20	93.90		2191.50
19	3.5	54						59.50	49.00	38.50			21.00	17.50	3.50		38.50		227.50
20	2.8	458			156.80	109.20	109.20	338.80	92.40			254.80	176.40	14.00	2.80	28.00			1282.40
21	3.5	224			105.00	129.50	147.00	52.50	31.50		42.00	52.50	3.50	3.50	79.80	24.50	112.00		783.30
22	2.45	179						230.30	191.10	2.45			14.70						438.55
23	1.00	126									57.00	36.00	6.00	4.00	3.00	18.00	4.00	1.00	129.00
24	1.5	584					15.00	402.00	156.00	34.50	34.50	84.00	93.10	22.50	10.50	15.00	3.00	34.50	915.10
27	1.1	892		155.10	402.60	165.00	36.30	22.00		24.20	53.90	16.50	1.10	15.40	2.20	16.50	7.90		988.00
Course 502	2.2	15																33.00	33.00
Totals		7239		230.70	1435.40	2642.30	2197.40	2381.10	1257.80	795.05	811.90	633.50	1042.8	531.30	733.50	962.00	879.70	264.10	19880.76

*One Module 2 class with 74 participants was given only 2.00 CEU's.

** One NCWM EU or CEU is equivalent to 10 contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction.

*** Effective August 31, 1997, the NIST Office of Weights and Measures assumed responsibility for tracking and documenting NTP Training Course activity and awarding of NCWM EUs (ACT Registry Service ceased offering that service on that date).

Continuing Education Units (CEUs/NCWM EUs) Awarded*
By the National Conference on Weights and Measures
For Attendance at OWM Metrology Seminars
(As of June 30, 2000)**

Course No.*	No. of NCWM EUs/CEUs**	Participants	1980 Total	1991 Total	1992 Total	1993 Total	1994 Total	1995 Total	1996 Total	1997 Total	1998 Total	1999 Total	2000 Total	Grand Total
201	3.60	183	97.20	54.00	7.20	28.80		244.30	72.00	39.80	21.80	129.60		894.30
202	3.50	107	101.50	52.50	14.00	28.00		129.50	10.50		21.10	17.50		374.60
203	3.10	125	49.60	40.30	37.60	6.20		151.90	31.00			71.30		387.90
204	2.50	36				5.00		42.50		37.50	4.75			89.75
Totals		461	248.30	146.80	58.80	68.00	None	568.20	113.50	77.10	47.45	218.40	None	1546.55

* Course No. 201: Basic Metrology I
 Course No. 202: Basic Metrology II
 Course No. 203: Intermediate Metrology
 Course No. 204: Advanced Metrology

** One NCWM EU or CEU is equivalent to 10 contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction.

*** Effective August 31, 1997, the NIST Office of Weights and Measures assumed responsibility for tracking and documenting of NTP Training Course activity and awarding of NCWM EUs (ACT Registry Service ceased offering that service on that date).

**NATIONAL TRAINING PROGRAM REGISTRY
SUMMARY OF NIST-NCWM INSTRUCTOR TRAINING PROGRAMS
(As of June 30, 2000)**

Courses listed in the NTP Registry and total NCWM Educational Units (EUs) awarded:

- No. 207, Retail Computing Scales - 3.10 EUs**
- No. 306, Liquefied Petroleum Gas Liquid-Measuring Devices - 3.5 EUs**
- No. 307, Retail Motor-Fuel Dispensers and Consoles - 2.8 EUs**
- No. 501, National Type Evaluation Program (NTEP) – 2.2 EUs**
- No. 603, Handbook 133, Checking the Net Contents of Packaged Goods - 3.5 EUs**
- No. 604, Price Verification - 2.2 EUs**

Individuals Trained by Course							
Sponsor	Course No. 207	Course No. 306	Course No. 307	Course No. 501	Course No. 603	Course No. 604	Total
NIST-NCWM	52	14	42	47	146	114	415

Total NCWM Educational Units Awarded						
Course No. 207	Course No. 306	Course No. 307	Course No. 501	Course No. 603	Course No. 604	Total
182.00	49.00	117.60	103.40	511.00	250.80	1414.00

ALABAMA

Steadman Hollis HB133
 Frank Gissendanner Price Verification HB133

ALASKA

Scott Bowen NTEP
 Mike Campbell HB133
 Retail Computing Scales
 John M. Landis NTEP
 Mike Nethercott Price Verification

ARIZONA

Carson Keith NTEP
 John Moore HB133 NTEP
 Price Verification
 David A. Turner Retail Computing Scales

ARKANSAS

Tim Chesser NTEP
 HB133
 Roger Frazier Retail Motor- Fuel Dispensers
 Price Verification
 Richard Slater Retail Computing Scales
 Harlin Wheeler HB133

CALIFORNIA

Thomas Bloomer Retail Computing Scales
 Steve Clay HB133
 James Delperdang Retail Computing Scales
 Marianne Delperdang Price Verification
 Richard Greek NTEP
 Dennis Johannes HB133
 Price Verification
 Michael Kelly Retail Motor-Fuel Dispensers
 Roger Macey HB133
 Brett Saum LPG

Administration and Public Affairs Committee

COLORADO

Robert Athearn HB133
 Price Verification
 Scott Boyd NTEP
 Douglas Jones NTEP
 Dennis McCrary Retail Computing Scales
 Howard Noble HB133

CONNECTICUT

William Donahoe HB133
 Retail Computing Scales
 Frank Forrest LPG
 Thomas Phelps HB133
 Charles R. Smith Price Verification
 Peter Wilson HB133

DELAWARE

Steve Connors HB133
 Anthony Deserto LPG
 NTEP
 Price Verification
 William Lagemann Price Verification
 Stephen Nickerson HB133

DISTRICT OF COLUMBIA

Jeffrey Mason HB133
 Price Verification
 Retail Computing Scales

FLORIDA

Carlos D'Arcy HB133
 Fred Derby HB133
 Robert Garriss NTEP
 Price Verification
 Steve Hadder Retail Motor-Fuel Dispensers
 Don M. Williams Price Verification
 Retail Computing Scales
 Bryan Yongue HB133

GEORGIA

Sam Burtz, Jr. Price Verification
 Tony Davis Retail Motor-Fuel Dispensers
 Jerry Flanders HB133
 Oscar Garrison HB133

HAWAII

Earl Payanal Retail Computing Scales
 NTEP
 Dianne Yamamoto Price Verification
 HB133

IDAHO

Mike Hartruff Retail Motor-Fuel Dispensers
 Kevin Merritt HB133
 Price Verification
 Retail Computing Scales
 Mike Proctor NTEP

ILLINOIS

Richard Philmon HB133
 Retail Motor-Fuel Dispensers
 Greg Plym LPG
 Tad Tucker HB133
 Retail Computing Scales
 Kyran Wagenecht Retail Computing Scales

INDIANA

Jerry Clingaman, Jr. HB133
 Retail Computing Scales
 Sherry Fowlkes NTEP
 Michael Horan HB133
 Retail Computing Scales
 Price Verification
 Michelle I. Phillips Retail Motor-Fuel Dispensers

IOWA

Darryl Brown Retail Computing Scales
 Price Verification
 HB133
 Retail Motor- Fuel Dispensers
 NTEP
 Price Verification
 Susan Bulver HB133
 Ivan Hankins III HB133
 Michael Norris NTEP
 Retail Computing Scales
 Charles Oakley Retail Computing Scales
 Arlyn Oman HB133
 NTEP
 Retail Motor-Fuel Dispensers
 Ralph Venteicher LPG

KANSAS

Jim Behrend Retail Motor-Fuel Dispensers
 Teg Chaffee Retail Computing Scales
 Terry Davis NTEP
 Chris Farthing Retail Computing Scales
 Maureen Henzler HB133
 Price Verification
 Retail Computing Scales
 Lewis Hutfles LPG
 Robert Schneider Retail Motor- Fuel Dispensers
 Charles Stutesman NTEP

KENTUCKY

Robert Ginter Retail Motor-Fuel Dispensers
 James Kemp HB133
 Luther Nall Retail Computing Scales
 Randy Wise HB133
 Price Verification

LOUISIANA

Archie Lambert Retail Motor- Fuel Dispensers
 Isaiah Lawson HB133
 Price Verification
 Danny McCartney NTEP
 Retail Computing Scales
 HB133

MAINE

John Cunningham Retail Computing Scales
 Price Verification
 Danny Newcombe Price Verification
 Harold Prince HB133
 NTEP

MARYLAND

Eugene Baumann HB133
 Robert Eaves HB133
 Price Verification
 Thomas Fagan Jr. HB133
 Michael Frailer HB133
 Retail Computing Scales
 Lisa Griffith HB133
 William Hall HB133
 Mark Lambert HB133
 Donald Mason HB133
 Price Verification
 LPG
 Barbara Miller HB133
 Edward Payne, Jr. HB133
 Price Verification
 Retail Computing Scales
 NTEP
 James Price III HB133
 Kenneth Ramsburg HB133
 Price Verification
 LPG
 Retail Computing Scales
 Retail Motor- Fuel Dispensers
 Leila Smith Retail Computing Scales
 NTEP
 Will Wothlie HB133
 LPG
 Retail Computing Scales
 NTEP

MASSACHUSETTS

Stephen Agostinelli HB133
 Retail Motor- Fuel Dispensers
 Stephen Berard HB133
 Price Verification
 Retail Computing Scales
 Mark Coyne (Brockton) Retail Computing Scales
 HB133
 NTEP
 Thomas Hansbury Retail Motor-Fuel Dispensers
 Robert McGrath (Boston) HB133
 NTEP
 David Niemczura Retail Motor-Fuel Dispensers
 Richard Oliver Retail Computing Scales
 Harvey Paclat (Boston) HB133

MICHIGAN

Robert DeRubeis Retail Computing Scales
 Terry Gawel Price Verification
 Retail Computing Scales
 Frank Iacopeli HB133
 Brad Pagrati Price Verification
 Ed Paladi HB133
 Michael Pinagel HB133
 Price Verification
 LPG
 Retail Computing Scales
 Dennis Ross NTEP
 Judi VanScott Price Verification
 Retail Motor-Fuel Dispensers
 Tim White NTEP

MINNESOTA

Roger Menk HB133
 Julie Quinn Price Verification

MISSISSIPPI

Harold Baughman Price Verification
 Ralph Blake HB133
 Price Verification
 Retail Computing Scales
 Gerald Broom LPG
 William E. Burgess, Jr. Price Verification
 Mike Kusch Retail Motor-Fuel Dispensers
 Sammy Lang HB133

MISSOURI

Wayne Fritts Retail Computing Scales
 HB133
 Price Verification
 Dwain Snider NTEP

Administration and Public Affairs Committee

MONTANA

Randy Griswold Price Verification
 Jack Kane HB133
 LPG
 NTEP
 Retail Motor- Fuel Dispensers
 Alfred Page LPG
 Fred Steinbacher HB133
 H. Ray Waylett Retail Computing Scales

NEBRASKA

Scott Arner LPG
 Don Onwiler NTEP
 Retail Motor- Fuel Dispensers
 Retail Computing Scales
 Terrence Powell HB133

NEVADA

Kevin Coyne HB133
 Retail Computing Scales
 Retail Motor-Fuel Dispensers
 George Dorsa Price Verification
 Edward M. Hoganson HB133
 NTEP
 Retail Computing Scales
 Price Verification
 David M. Scheller Price Verification

NEW HAMPSHIRE

Richard Cote Price Verification
 HB133
 Retail Computing Scales
 Jeff Wentworth Price Verification
 Ernest T. West HB133
 Kevin Young LPG

NEW JERSEY

Robert Alviene HB133
 John McGuire HB133
 Joseph Romano Price Verification

NEW MEXICO

Joe Gomez NTEP
 Price Verification
 HB133
 Wilfred Mendoza LPG
 Johnny M. Peralta HB133
 Steve Sumner Price Verification
 Retail Computing Scales
 David Turning Retail Motor-Fuel Dispensers

NEW YORK

Steven A. Martin Price Verification
 Michael Sikula HB133

NORTH CAROLINA

Gerald Brown Price Verification
 HB133
 Retail Computing Scales
 Jerry Butler NTEP
 Retail Computing Scales
 William Nelson HB133
 Donnie Perry HB133
 James L. Skipper Retail Motor-Fuel Dispensers

NORTH DAKOTA

William Bianco, Sr. HB133

OHIO

Barbara DeSalvo HB133
 John R. Gray HB133
 Thomas Kamphaus Price Verification
 Roger Lawson HB133
 Kenneth Wheeler Retail Computing Scales
 Jeffrey Yankosky (Cincinnati) HB133

OKLAHOMA

Charles Carter HB133
 Retail Computing Scales
 Price Verification

OREGON

Clark Cooney LPG
 Henry Lasher Retail Computing Scales
 Christine A. Parks HB133
 James E. Ross NTEP
 Russ Wyckoff NTEP
 Retail Motor- Fuel Dispensers

PENNSYLVANIA

Winifred Anderson (Philadelphia) HB133
 John Banks (Philadelphia) HB133
 Vera Barnes (Philadelphia) HB133
 Robert Bonner Price Verification
 Charles Bruckner Price Verification
 Paul Calvanelli HB133
 Marianne Caszatt Price Verification
 HB133
 Retail Computing Scales
 Retail Motor- Fuel Dispensers
 NTEP
 David Cutchineal (Bucks County) HB133
 James R. Davis (Northampton County) HB133
 Michele DeMarshall (Philadelphia) HB133
 Price Verification
 Retail Computing Scales
 Ken Deitzler HB133
 John Dillabaugh HB133
 Cathy Dunn HB133

Pennsylvania (Continued)
 Dean Ely LPG
 Price Verification
 Rick A. Fogal HB133
 Price Verification
 Albert Horne (Delaware County) HB133
 William H. Jaeschke (Delaware County) HB133
 Bradley Lundberg Price Verification
 Retail Motor- Fuel Dispensers
 Mary T. Mahoney (Philadelphia) HB133
 Allen W. Martin Retail Computing Scales
 Michael McGoff Price Verification
 Joseph McGonigle (Delaware County) HB133
 Donald McGowan Price Verification
 George Mensch Price Verification
 Diane C. Mohollen (Philadelphia) HB133
 Anthony Pagano Price Verification
 Davud A. Patchell, III (Montgomery County) HB133
 Louis G. Patterson, III (Philadelphia) HB133
 Edward Petricca Price Verification
 Steven Reilly (Bucks County) (2) HB133
 Michael Rice (Montgomery County) HB133
 Ronald Roof Price Verification
 Douglas Rudy Price Verification
 Danielle Shiako Price Verification
 Edward Snow (Delaware County) HB133
 Joshua Stephanian Price Verification
 La Keshia Thomas (Philadelphia) HB133
 John Tobin (Montgomery County) HB133
 Edward Tully, Jr. (Philadelphia) HB133
 Evelyn M. Yancoskie (Delaware County) HB133
 A. Courtney Yelle (Bucks County) Price Verification

PUERTO RICO

Otilio Rodriguez Colon HB133

RHODE ISLAND

Bernard Augustine Price Verification
 Lynda Agresti Maurer HB133

SOUTH CAROLINA

David Ellisor Price Verification
 HB133
 Retail Computing Scales
 NTEP
 Ronnie P. West Price Verification

SOUTH DAKOTA

Dick Bowman HB133
 Ralph Busch NTEP
 Retail Motor- Fuel Dispensers

TENNESSEE

Gary Cloyd HB133

Charles E. Coleman HB133
 Price Verification
 Retail Computing Scales
 Retail Motor- Fuel Dispensers
 NTEP
 Dale Drinnon HB133
 Rickey Freeman HB133
 Randy Jennings LPG
 William LaFont HB133
 Danny Ray Scott Retail Computing Scales
 HB133
 NTEP
 James Thompson HB133
 Robert G. Williams NTEP
 Price Verification
 Clyde E. Woods HB133

TEXAS

Debborah Danford HB133
 Harvey Fischer HB133
 Retail Motor-Fuel Dispensers
 Oscar Garrison HB133
 Pete Holcombe Price Verification
 Sally Preston HB133
 Edwin J. Price Price Verification
 HB133
 Richard Rendon Retail Computing Scales
 Damon Slaydon HB133
 NTEP
 Price Verification
 Retail Computing Scales
 Jim Wiechkoske LPG

UTAH

Mark Demings NTEP
 Brett Gurney HB133
 Price Verification
 Dale Kunze Retail Motor-Fuel Dispensers
 David Paice Retail Computing Scales

VERMONT

Greg Ballou Retail Motor-Fuel Dispensers
 Raymond Cioffi NTEP
 HB133
 James Cameron HB133
 Hugh Lund Price Verification
 Retail Computing Scales

VIRGINIA

John L. Bates Price Verification
 G. Weston Diggs HB133
 Jeff Rogers HB133

Administration and Public Affairs Committee

VIRGIN ISLANDS

Collin Brooks Price Verification
Archie Corbitt HB133

WASHINGTON

John Allen HB133
LPG
Tim Douglass (Seattle) Price Verification
Bruce Feagan (Seattle) HB133
Retail Computing Scales
Arthur Fluharty Price Verification
Mike Mann Retail Computing Scales
Rick Mulcahy Retail Computing Scales
Keith Stoner (Seattle) Retail Motor- Fuel Dispensers

WEST VIRGINIA

Stephen Casto LPG
Retail Computing Scales
HB133
NTEP
William A. Cobb HB133
Price Verification
Dennis F. Harrison Retail Motor- Fuel Dispensers

WISCONSIN

Kathryn Dresser* Price Verification
HB133
Retail Computing Scales
NTEP
Retail Motor- Fuel Dispensers

WYOMING

Kim W. Decker HB133
Quince Olsen HB133
Albie Mickelson Retail Motor-Fuel Dispensers
Ron Weber HB133

Albania

Dritan Meta Retail Motor-Fuel Dispensers

Tanzania, East Africa

Rose Katabi Retail Computing Scales
Retail Motor- Fuel Dispensers

Wayne Division -Dresser Industries

Cheryl Forster Retail Motor-Fuel Dispensers
Dale Godfrey Retail Motor-Fuel Dispensers

*No longer a Weights and Measures Official

Report of the National Type Evaluation Program (NTEP) Committee

Aves Thompson
 Director
 Alaska Measurement Standards/Commercial Vehicle Enforcement

Reference
 Key Number

500 Introduction

The National Type Evaluation Program Committee submits its Report for the 85th National Conference on Weights and Measures. This report consists of the Interim Report presented in NCWM Publication, as amended in the Addendum Sheets issued during the Annual Meeting, which was held July 16-20, 2000 in Richmond, Virginia. The Committee considered communications received prior to and during the 85th Annual Meeting which are noted in this report.

Table A identifies all of the items contained in the report by Reference Key Number, Item Title, and Page Number. The item numbers are those assigned in the Committee’s Interim Meeting Report. Voting items are indicated with a “V” or, if the item was part of the consent calendar, by the suffix “VC” after the item numbers. Items marked with an “I” after the reference key number are information items. An item marked with a “W” means that item has been withdrawn. Items marked with a “W” generally will be referred to the regional weights and measures associations or other groups because they either need additional development, analysis, and input, or they do not have sufficient Committee support to bring them before the NCWM. Table B lists the appendices to the report, and Table C provides a summary of the results of the voting on the Committee’s items and the report in entirety.

The attached report may contain recommendations to revise or amend NCWM Publication 14, Administrative Procedures, Technical Policy, Checklists, and Test Procedures or other documents. Revisions proposed and/or adopted by Committee members are in **bold face print** and are shown by ~~crossing out~~ information to be deleted and underlining information to be added. New items proposed and/or adopted for addition to NCWM Publication 14 or other documents are designated as such and shown in **bold face print**.

Table A – Agenda Items

Reference Key No.	Title of Item	Page
501-1	I U.S. – CANADA MUTUAL RECOGNITION OF TYPE EVALUATION PROJECT	3
501-2	I INTERNATIONAL ORGANIZATION OF LEGAL METROLOGY (OIML) CERTIFICATE PROJECT	4
501-3	I TEST DATA EXCHANGE AGREEMENTS	5
501-4	I ADOPTION OF UNIFORM REGULATION FOR NATIONAL TYPE EVALUATION BY STATES	6
501-5	I NTEP POLICY: CHALLENGES TO A CERTIFICATE OF CONFORMANCE AND VERIFICATION THAT PRODUCTION MEETS TYPE.....	7
501-6	I NTEP PARTICIPATING LABORATORIES AND EVALUATIONS REPORTS	10
501-7	I NTETC SECTORS REPORTS	11
501-8	V NTEP POLICY: CHANGES TO THE DEFINITION OF AN “INACTIVE” CERTIFICATE OF CONFORMANCE.....	13
501-9	V PRIVATE LABEL CERTIFICATES OF CONFORMANCE	15
501-10	W IDENTIFYING A PRIVATE LABEL CERTIFICATE OF CONFORMANCE.....	17

Table B - Appendices

Appendix	Title	Reference Key No.	Page
A	Status of NTEP Adoption, SMA Map	501-4.....	19
B	Proposed Alternative for Production Meets Type and Challenges to a Certificate of Conformance – NTEP Business Plan Work Group October 1999 Proposal	501-5.....	20
C	Participating NTEP Laboratories Report	501-6.....	23
D	NTETC Grain Moisture & NIR Protein Analyzer Sectors September 1999 Meeting Summary	501-7.....	25
E	NTETC Measuring Sector September 1999 Meeting Summary	501-7.....	49
F	NTETC Weighing Sector October 1999 Meeting Summary	501-7.....	70

**Table C
Voting Results**

Reference Key No.	House of State Representatives		House of Delegates		Results
	Yes	No	Yes	No	
501-8	33	0	46	0	Passed
501-9	36	0	47	0	Passed
500 (Report in its Entirety)	36	0	47	0	Passed

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

501-1 I U.S. – Canada Mutual Recognition of Type Evaluation Project

Source: Carryover Item 501-1 of the Report of the NTEP Committee to the 84th NCWM, 1999.

Background: In 1994, Canada and the United States established a joint program that enables a manufacturer to submit certain types of weighing devices to either country for type evaluation testing. Under this program, the device can be tested to both U.S. and Canadian requirements in a single evaluation. Upon completing the tests, the country performing the evaluation forwards the results to the other country; the results can be used as a basis for issuing a type evaluation certificate in that country. Each country reserves the right to perform additional testing and to decide whether or not to issue a type approval certificate based on the results. The program for weighing devices has operated successfully since its inception and was expanded over the years to include additional types of weighing devices.

In August 1998, work began to establish a pilot program for liquid-measuring devices. When this program is implemented, a manufacturer can request an evaluation to be conducted by Measurement Canada according to NTEP requirements; this testing may be performed in conjunction with testing to Canadian requirements. NTEP will accept the resulting data from Measurement Canada as a basis for issuing an NTEP Certificate for the device. Measurement Canada asked that the scope of the program, at least initially, be limited to retail motor-fuel dispensers. This will facilitate implementing the program and enable Measurement Canada to confirm whether or not the program fits within the strategic direction of its organization. It should be noted that this program will not be a mutual recognition program as in the weighing area because Canada has requirements for retail motor-fuel dispensers to which NTEP is unable to test. NTEP cannot, therefore, provide test data which can be used by Measurement Canada to issue Canadian Notices of Approval. However, this program will allow NTEP to recognize data collected by Measurement Canada as the basis for issuing an NTEP Certificate.

At the 1999 Annual Meeting, Tina Butcher, National Institute of Standards and Technology (NIST) Office of Weights and Measures (OWM), and Gilles Vinet, Measurement Canada, reported that further work on the pilot program for liquid-measuring devices has been put on hold pending discussions between NCWM and NIST to reorganize NTEP. Mrs. Butcher and Mr. Vinet also reported that the mutual recognition program with Canada on weighing devices continues to operate successfully with no changes in this area of the program.

2000 Interim Meeting Action: NTEP Committee Chairman, Aves Thompson, reported receiving a November 30, 1999, letter from Alan Johnston, Measurement Canada, concerning the status of the U.S./Canada Mutual Recognition Program for Type Evaluation. In his letter, Mr. Johnston noted that the agreement between the two countries' type approval programs expired in March 1999, but both countries continue to accept each other's type evaluation results. Measurement Canada is willing to continue this practice; however, it is interested in formally renewing the agreement when NCWM, Inc., assumes responsibility for managing and administering NTEP. Measurement Canada suggested expanding the agreement at that time to include other device types.

Mr. Thompson responded to Mr. Johnston in a December 9, 1999, letter in which he confirmed the objective of the mutual recognition agreement. He also commended the efforts of Measurement Canada, NIST, and NCWM to support the agreement. Mr. Thompson confirmed that the transfer of NTEP management and administration to NCWM, Inc., is scheduled for October 1, 2000, and that the Board of Directors welcomes the opportunity to renew and entertain expanding the agreement with Measurement Canada.

In its review of this issue, the Committee confirmed support for the positions outlined in Mr. Thompson's letter. The Committee also noted that, if Measurement Canada is amenable, it would like to expand the agreement to include retail motor-fuel dispensers immediately upon renewing the agreement.

Tina Butcher, Technical Advisor, noted that the work done for retail motor-fuel dispensers, as described in the background section above, would enable NTEP and Measurement Canada to implement an agreement in this area rather rapidly. Mrs. Butcher also noted that the work in the area of liquid-measuring devices was different from that done for weighing devices. For measuring devices, there are significant differences in some areas of the two countries' requirements, and NTEP does not have test facilities necessary to test devices to some of the Canadian requirements. Consequently, the pilot program, which was originally discussed, was to have been limited to one in which NTEP would accept Canadian results as a basis for issuing NTEP Certificates, but not one in which NTEP would perform testing for Measurement Canada. At Measurement Canada's request, the pilot was to initially be limited to retail motor-fuel

dispensers; however, NTEP maintains an active interest in expanding the area to include other types of liquid-measuring devices.

2000 Annual Meeting Action: The Committee received comments from industry indicating continued support for renewing the agreement with Canada. The Committee also received written and oral comments from Mel Hankel, MCH Engineering Associates, Inc., and other members of the measuring industry supporting expansion of the agreement to include liquid-measuring devices.

The Committee looks forward to continuing work with Measurement Canada and renewing the agreement. The Committee expresses its appreciation to Measurement Canada for its continued cooperation.

501-2 I International Organization of Legal Metrology (OIML) Certificate Project

Source: Carryover Item 501-2 of the Report of the NTEP Committee to the 84th NCWM, 1999.

Background: This item is included on the Committee's agenda to provide an update on NTEP's work to issue OIML R60 and R76 Certificates. The status of activities as of the date of the agenda is outlined below. The Committee also received written and oral comments from industry during both the Interim and Annual Meetings supporting expansion of NTEP's OIML test capability to include measuring devices.

2000 Interim Meeting Action:

OIML R60, Load Cells: Since announcing R60 test capability in April 1997, NTEP has received three applications for R60 testing. The first OIML Certificate was issued to Mettler-Toledo, Inc., in early 1999 and the second to Revere Transducers, Inc., shortly thereafter. Following additional testing, a third R60 Certificate was issued to expand the capacities listed on the original Revere Certificate. No additional requests for OIML R60 tests have been received.

OIML R76, Non-Automatic Weighing Instruments: NTEP announced R76 test capability in July 1998. Just prior to the 1999 Interim Meeting, NTEP received its first application for an R76 test; a second application was received shortly after. Testing has been completed on the first application and a Certificate issued. Testing is in process on the second application.

The two R76 NTEP laboratories are reviewing a trial software package for recording and processing R76 test reports. A decision to purchase a software package for the two laboratories will be made based on feedback from the laboratories.

Tina Butcher, Technical Advisor, reported that, at the Fall 1999 Scale Manufacturers Association (SMA) meeting, NTEP received a request to consider evaluating separate components such as weighing elements and weight indicators to OIML R76 requirements. Subsequent to these discussions, OWM received examples of a test report and associated OIML Certificate for a weighing component, specifically an indicator. NIST-OWM reviewed the data packet with NIST staff and consulted with the NTEP laboratories and other NIST administrative and technical staff about the logistics and technical aspects of issuing such Certificates. On December 30, 1999, NIST announced that NTEP will begin issuing R76 Certificates for weighing elements and weight indicator components.

Since the December 30, 1999, announcement was issued, the International Bureau of Legal Metrology (BIML) informed Sam Chappell, U.S. representative to International Committee on Legal Metrology (CIML), that BIML would *not* register OIML Certificates for components under R76. BIML noted that, while the issue of component testing has been discussed in the past and has generated interest, there are presently no separate test procedures and test report forms for separate components including indicators and weighing elements. Consequently, OIML is unable to recognize OIML Certificates issued for separate components under R76.

Dr. Chappell reported to the Committee that, based on members' strong degree of interest, his office would volunteer to prepare the test procedures and test reports for separate indicators and weighing elements under R76. Dr. Chappell noted that he would submit a proposal to undertake the task to Germany and France, which presently serve as joint secretariat for R76. OWM will continue to provide the service of testing components to R76 based upon its interpretation of applicable R76 requirements. However, manufacturers must be aware that the testing will result only in a report of test and not an OIML Certificate. Should provisions be made under OIML to issue Certificates to separate components at some future date, it is possible that the test reports might be used as a basis for obtaining the OIML Certificates. An announcement clarifying the available testing service will be distributed to all current NTEP Certificate holders.

2000 Annual Meeting Action: Industry members expressed support for continued work on this issue. Several companies, including SMA members, indicated that the test report would be helpful to U.S. manufacturers until such time that OIML Certificates for components are available. SMA would like NCWM, Inc., to consider issuing an R76 test certificate and associated test report on a component. SMA would like the NIST Office of Standards Services to pursue component approvals for OIML Certificates, in accordance with the first committee draft recommendation (OIML TC9) “Indicators for Weighing Instruments.”

501-3 I Test Data Exchange Arrangements

Source: Carryover Item 501-3 of the Report of the NTEP Committee to the 84th NCWM, 1999.

Background/Discussion: In response to a request by the NCWM, a meeting was held at NIST in April 1998 to explore the possibility of establishing a multilateral agreement on type approval. The meeting was attended by representatives of the NCWM, NIST-OWM, NIST-TSA, eight other OIML countries, and the Director of the International Bureau of Legal Metrology (BIML). An initial draft of an agreement was presented at that meeting and, although participants did not agree to accept the agreement as written, they felt that it was a good start. An area of disagreement was in the scope of testing. Some participants wanted the agreement to establish the provision for “one-stop testing” in which any country can perform *all* tests according to another country’s requirements. Others, including the NCWM representatives, felt that the agreement should begin with a limited approach of recognizing OIML test data and be expanded as mutual confidence for operating the agreement is established among participating laboratories. The U.S. representatives noted the successful approach taken with US/Canada mutual recognition work. The U.S./Canada program began with simple devices and expanded to include more complex devices and a broader scope of activities as confidence was established in the program and in the participants. Participants in the meeting also acknowledged the need to establish confidence in each other’s laboratories and to establish criteria that might be used to assess the capabilities of participating laboratories in a specific testing area.

Several additional meetings have been held since that time, and subsequent drafts of the proposed agreement have been prepared and circulated among participants. Sam Chappell, Chief, NIST Technical Standards Activities Program, has provided the NTEP Committee with regular updates on activities in this area. During the Committee’s 1999 meetings, Dr. Chappell reported that some OIML member nations are quite interested in quickly establishing an agreement, and he provided a proposed schedule of activities to an OIML work group to encourage progress of the work.

The participants in this work established a target date for a framework agreement that would be endorsed by CIML at its October 1999 meeting. Under the current proposed framework, only two member countries must sign up in any one testing category for measuring instruments or devices. A different agreement will exist for each category of instrument covered. The proposal includes the concept of one-stop testing and also calls for criteria for establishing mutual confidence either by accreditation or peer review of the testing laboratories and issuing (certifying) body. It is hoped that NCWM members will select agreements in which they feel comfortable participating.

At the 1999 NCWM Annual Meeting, Dr. Chappell reported that a Work Group Meeting was held in Paris during the first week of June to discuss the proposed test data exchange agreement. Approximately 40 representatives of 17 different countries attended the meeting. In addition to Dr. Chappell, U.S. representatives at the meeting included Barbara Bloch, Director, California Division of Measurement Standards, representing NCWM; John Elengo, NIST Technical Consultant; Darrell Flocken, Mettler-Toledo; and Gary Lameris, Hobart Corporation. Ms. Bloch provided the NTEP Committee with a report of that meeting; a copy of her report is found in Appendix A of the Committee’s 1999 Final Report. Dr. Chappell noted that the scope of the agreement is limited to a particular category of instruments and, while this does not represent a big community of participants that issue type approval certificates, it is a global community.

During its July 1999 discussion of this issue, Committee members again noted that some international work group participants have expressed an interest in conducting, in addition to testing to OIML recommendations, testing to participating country requirements (e.g., NTEP tests) on devices submitted to their laboratories. Such an approach would provide the convenience of “one-stop testing” to manufacturers who could have their devices tested to multiple countries’ requirements in one location. The Committee noted that NTEP currently accepts results of NTEP tests conducted by Measurement Canada, based on establishing mutual confidence in each country’s test capabilities. The proposed mutual agreement includes provisions for establishing mutual confidence among participants’ laboratories, including methods similar to that used by the United States and Canada.

With the fairly recent issuance of the first U.S. OIML Certificates, the Committee noted an interest in seeing whether or not other countries accept the test data accompanying U.S.-issued OIML Certificates before taking a position on mutually

accepting other countries' test results. Under such an agreement, the Committee was willing to accept another country's OIML CC test data as a basis of issuing an NTEP CC, but noted that the agreement provides for additional testing to be conducted by participants if indicated by the test report. The Committee is interested in hearing whether NCWM members' jurisdictions would be willing to accept test data based on NTEP requirements from other countries since the proposed agreement would include provisions for other countries to perform NTEP tests if they choose to do so. It is noted that mutual confidence must be established among all participants with regard to their competence in testing.

2000 Interim Meeting Action: In December 1999, Dr. Sam Chappell distributed the 5th Draft of OIML Document "Mutual Acceptance Agreement on OIML Pattern Evaluation" to interested parties. He requested that comments on the document be submitted by January 31, 2000. During the Interim Meeting, Dr. Chappell discussed the current status of the 5th draft and noted that the OIML participants have been generally pleased by the progress in establishing the framework for the final agreement. The 5th draft provides for participants to indicate their country-specific tests in the agreement; the agreement allows other participants to perform those tests in conjunction with tests to OIML requirements if they want to do so.

During the Interim 2000 work sessions, the Committee discussed the 5th draft and submitted comments supporting the document to Dr. Chappell following the Interim Meeting. The Committee expressed appreciation to Dr. Chappell's office for continued work on the agreement.

The Committee also received comments concerning the presentation of the background material on this item. Comments indicate concern that the background implied that the proposed agreement represented a less acceptable compromise than the current agreement between the United States and Canada. The Committee agreed that this was not the intention of the background information; the information was intended to describe in detail the U.S./Canada agreement for comparison. Comments also requested clarification that countries do not presently accept other countries' OIML Certificates without first reviewing the accompanying test data and pertinent information. The Committee reaffirmed support of the proposed agreement, and changed the background section of this issue to reflect these comments.

The Committee heard comments from industry members representing both the weighing and measuring sectors supporting the continuation of work to establish test data exchange agreements with other countries. Comments from the liquid-measuring device industry specifically supported establishment of agreements which would include liquid-measuring devices.

2000 Annual Meeting Action: Dr. Chappell reported to the Committee that the OIML Work Group on the Mutual Acceptance Arrangement (MAA) met in June 2000 in Paris to review the 6th draft of the proposed arrangement. NTEP Committee chairman, Aves Thompson, represented the NCWM at that meeting. Dr. Chappell reported that work is progressing well on the development of the framework OIML document for the MAA. The MAA will be discussed at a roundtable in October 2000 in conjunction with the Quadrennial International Conference on Legal Metrology. On behalf of the NCWM, Mr. Thompson expressed support for continued work on this arrangement.

501-4 I Adoption of Uniform Regulation for National Type Evaluation by States

Source: Carryover Item 501-4 of the Report of the NTEP Committee to the 84th NCWM, 1999.

Background/Discussion: Daryl Tonini, Scale Manufacturers Association (SMA), updated the NTEP Committee at both the 1999 Interim and Annual meetings on the status of SMA's drive to assist States to adopt two regulations: (1) the Uniform Regulation for National Type Evaluation (URNTE), and (2) the Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies (VRR). At the 1999 Annual Meeting, Mr. Tonini reported that Vermont continues to work toward adoption, and Kentucky's Attorney General's Office plans to proceed with NTEP adoption. Texas reports that, although they do not presently intend to formally adopt NTEP, they ask for NTEP Certificates of Conformance when questions arise concerning compliance of a device with Handbook 44. Gary West, NM, reported to the Committee at that meeting that New Mexico is in the process of adopting an NTEP regulation and asked various members of the weights and measures community for comments on a draft regulation.

SMA continues to host NTEP breakfasts for State Directors at the regional weights and measures association meetings. SMA polled the NTEP laboratories for suggestions on questions to be discussed at future breakfasts. Discussions at these breakfasts have greatly assisted States to implement NTEP and to identify differences in implementation among the States.

Mr. Tonini reported that States with registered service agency programs seem to have the strongest programs. These States use the registered service agency requirements to require training of service personnel, thus strengthening and

improving the general compliance of devices with Handbook 44. Lou Straub, MD, reported to the Committee at the 1999 Interim Meeting that Maryland prepared draft material to establish a registration program and received support from Maryland's Department of Agriculture. Mr. Straub recognized the importance of extending training beyond the weights and measures staff to the service personnel.

2000 Interim Meeting Action: Mr. Tonini updated the Committee on the status of adoption of URNTE. He reported that Florida is now operating as an NTEP jurisdiction. New Mexico continues to work toward adoption of NTEP. Mr. Tonini was unable to make contact with representatives from Kentucky, but he will continue to try to obtain information on their status.

Mr. Tonini also reported on the ongoing SMA-sponsored NTEP State Directors' breakfasts. These breakfasts are designed to enable jurisdictions to share information about adopting NTEP in their respective jurisdictions. They help to encourage non-NTEP jurisdictions to adopt the regulation and allow current NTEP jurisdictions to share ideas on how to make enforcement more effective and uniform among their States. The breakfasts also provide NTEP management with information relative to areas in which the operation and implementation of the program can be improved.

Mr. Tonini reported that the breakfasts continue to be successful and well received. The results of the 1997, 1998, and 1999 breakfast meetings are available through SMA's web site at www.scalemanufacturers.org. SMA chose two new topics for the coming year's meetings:

- (1) Have you encountered devices within your jurisdictions where you felt that production did not meet type and, if so, how did you deal with them?
- (2) What are your thoughts about dealing with the issue of repaired and remanufactured equipment?

Mr. Tonini also noted that OWM asked if meeting participants could be polled concerning their opinions on the NTEP Certification of Conformance web site.

2000 Annual Meeting Action: Daryl Tonini provided an update to the NCWM on progress in this area since the Interim Meeting. (A copy of the current SMA map is included in Appendix A.) Mr. Tonini reported that New Mexico and Texas continue to express their intentions toward adoption. Mr. Tonini also reported that Vermont is now interested in pursuing adoption of NTEP. Mr. Dave Quinn, Fairbanks, is working on behalf of SMA and Fairbanks to coordinate a meeting with representatives of NTEP and NTEP States neighboring Vermont to discuss issues surrounding adoption and implementation of NTEP in Vermont. Vermont has now indicated its availability to schedule this meeting.

The Committee expressed appreciation for SMA's continued efforts to encourage adoption of NTEP.

501-5 I NTEP Policy: Challenges to a Certificate of Conformance and Verification that Production Meets Type

Source: Carryover Item 501-5 of the Report of the NTEP Committee to the 84th NCWM, 1999.

Recommendation: The NTEP Business Plan Work Group recommends that NCWM consider the proposal outlined in Appendix B as an approach for addressing the issues of production meets type and challenges to Certificates of Conformance.

In developing procedures to handle actual challenges, the NTEP Committee developed the following proposal for production meets type or conformity assessment. It was developed to address the specific type of device involved in the challenges. The Committee recognizes that one process may not address all device types and that additional elements may need to be considered for other device types. The Committee asks that the NTEP Business Plan Work Group consider this proposal during its review of conformity assessment procedures.

Outline for Discussion - NTEP Process

The NTEP Committee offers the following outline to the NTEP Business Plan Working Group for their consideration. The following new evaluation process is proposed:

- ◆ Manufacturer submits application for Certificate of Conformance (CC)

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- ◆ Manufacturer submits device for prototype evaluation
- ◆ Prior to issuance of certificate NCWM, Inc., will:
 - Evaluate manufacturer's quality assurance system and manufacturing processes
 - Perform an on-site visit where appropriate (at the manufacturer's cost) to review the manufacturer's facilities and ability to follow the processes
 - Request the manufacturer to provide an affidavit that production models will conform to the prototype
- ◆ Provided the above is satisfactory, NCWM, Inc., will issue the CC
- ◆ As a condition of issuance of the CC, periodic evaluations by NCWM, Inc., will continue to include:
 - An annual submission by the manufacturer of statistical records of the products manufactured
 - Every 3 to 5 years, an NCWM, Inc., representative will visit the manufacturer's facility to conduct an evaluation
 - During the site visit, the representative will review statistical quality assurance and production records and may conduct a random test of a production device in the manufacturer's test facility
 - NTEP Committee examination of documentation submitted by field inspectors regarding performance of the device. (The NTEP Committee is aware that field inspectors cannot test for influence factors, such as temperature.)
- ◆ The NTEP Committee discussed, but did not reach a conclusion on, whether the CC should have an expiration date

Background/Discussion: In 1998, the NTEP Business Plan Work Group drafted procedures to: 1) address the issue of ensuring that weighing and measuring devices produced for the marketplace are the same as the model or type of the device that NTEP approved; and 2) resolve challenges to NTEP Certificates of Conformance. The procedures were intended to ultimately become part of the National Conference on Weights and Measures (NCWM) Publication 14, NTEP Administrative Procedures, Technical Policy, Checklists, and Test Procedures.

The draft procedures were published for comment in NCWM Publication 16, Program and Committee Reports for the 83rd Annual Meeting. Based on the comments it received, the Work Group felt that there was a lack of strong support for the original proposal concerning verification that production meets type. Consequently, the Work Group began considering an alternative proposal that involves receiving feedback from the States at the initial verification stage in the U.S. legal metrology system. The Work Group decided to collect industry comments on how to help ensure that production meets type. The Scale Manufacturers Association, the Gasoline Pump Manufacturers Association (GPMA), and the Meter Manufacturers Association (MMA) were asked to take the original proposal and the new proposal back to their respective organizations and develop input for the Work Group to consider by December 1, 1998. The production meets type issue was also added to the agendas of the fall 1998 meetings of the National Type Evaluation Technical Committee (NTETC) Weighing and Measuring Sectors.

At the 1999 Interim Meeting, Barbara Bloch, NTEP Business Plan Work Group Chairman, reported the Work Group's progress to the NTEP Committee. Ms. Bloch reported that the Work Group received comments from SMA, GPMA, MMA, and others on the "alternative proposal" described above. The Work Group agreed to review these comments at its February 1999 meeting. Ms. Bloch encouraged members of the NTEP Committee and other interested parties to attend the Work Group's meeting.

At the 1999 NCWM Annual Meeting, Ms. Bloch again updated the Committee on the Work Group's progress. Ms. Bloch gave the Committee notebooks that included the July 1999 report, a detailed progress report, and other related materials. (A copy of the Work Group's July 1999 report to the NTEP Committee is included in Appendix E of the Committee's 1999 Final Report. A few copies of the notebooks presented at the July 1999 meeting are available upon request from NIST-OWM.) The NTEP Committee again acknowledged the contributions of the Work Group and expressed appreciation of its continued efforts.

The Work Group met briefly during the 1999 NCWM Annual Meeting to review the original and alternative proposals and the comments received to date. Following that meeting, the Chairman of the Work Group revised the proposal as discussed by the Work Group and forwarded the results to Work Group members for comments. Based on input from Work Group members, Ms. Bloch forwarded a revised proposal (see Appendix B) to the NTEP Committee Technical Advisor requesting that it be added to the NTEP Committee's 2000 Interim agenda. Ms. Bloch also requested that the

two previous proposals (presented in Appendix C and Appendix D of the NTEP Committee's 1999 Final Report) be deleted.

At an October 1999 meeting, the NTEP Committee invited Peter Perino, Consultant, to discuss "production meets type" with the Committee and the Board of Directors. At that time, an outline of a plan emerged and Simon Stapleton, NCWM legal counsel, was asked to develop the outline shown in the recommendation above. The outline shows a definite shift in direction away from testing of individual devices to determine that "production meets type" to a method that focuses on the production and quality control processes that are used to ensure that "production devices meet type." Although the concept has been developed, specific procedures need to be further developed. The Committee supports the work of the NTEP Business Plan Work Group and feels that the outline above adds to the body of knowledge and may provide additional material for reaching a solution for the production meets type issues.

2000 Interim Meeting Action: The Committee received comments expressing concern about whether or not the proposed procedure published by the Committee in the Interim Agenda was intended to replace the procedures being developed by the NTEP Business Plan Work Group. Concerns were also expressed that the procedures proposed by the Committee may not be appropriate for all types of devices. The Committee noted that the procedures were intended only to present an alternative for the Work Group to consider in developing conformity assessment procedures, not to replace or usurp the efforts of the Work Group or to replace the Work Group's current proposal.

The Committee reported that NCWM, Inc., hired a consultant, Mr. Pete Perino, to provide technical guidance in resolving challenges and in assisting the Committee to develop a framework for adding a conformity assessment component to NTEP. Mr. Perino briefly described the work done by the Committee and the approaches the Committee considered. The Committee considered the approach of testing devices to verify or disprove the challenge. With such an approach, the party being challenged would probably question how the device was tested in generating the challenge and whether or not the device might have been altered from its original design. Another question that would arise is what number of devices must be tested to verify the challenge. To determine the number of devices to be tested, it would first be necessary to define the size(s) of the production lot(s). The Committee recognized that it is only possible to use statistics if you are concerned with devices from the same population. The weights and measures community is interested in the compliance of devices from different production lots.

During the discussions of the proposed approach, questions arose about whether or not this approach should be used for all device types. The Committee agrees that one set of procedures may not be appropriate for all device types and that the procedures need to be carefully examined and revised where appropriate to adequately address all device types. It was noted, however, that there are some elements which would be appropriate for all device types. Some noted that the proposed procedures are appropriate for devices subject to influence factor requirements since complying with these requirements can only be verified in a laboratory environment. However, additional comments indicated that even device types not subject to influence factor requirements would benefit from the procedures. Problems have been found with other device types, and there are elements even in these devices which could change in the absence of a quality system.

The Committee concluded that the best and most cost-effective solution was not to test devices after production as the primary tool. Rather, it should examine the front part of the process by performing an initial accreditation and subsequent audits of the quality and manufacturing systems. Mr. Perino noted that this approach is not contrary to the Business Plan Work Group's proposal because it specifies that applicants must agree to provide proof that they can produce devices which conform with the requirements. The approach that the Committee is considering requires that, in addition to producing the device which is tested, the manufacturer must also produce documentation which says there are quality and production systems in place. The primary tool in this approach is that, annually, the manufacturer would submit for his Certificate of Conformance a statistical report of the verification that occurred to ensure that the production devices comply with type. Mr. Perino noted that the Committee continues to refine the proposed procedures and welcomes comments on the proposed approach.

The Committee explained that the procedures were developed as part of efforts to resolve challenges involving a specific device type, a load cell. Because the Committee had current challenges before it, it needed to develop procedures to be implemented immediately rather than waiting until the Work Group completed its assigned tasks. The Work Group had also acknowledged that different procedures might be appropriate for different device types. The Committee published procedures to enable interested parties to review and comment on a possible alternative and to provide a mechanism for the Committee to hear feedback which might assist it in its review of the challenges.

The Committee again expressed appreciation for the Work Group's efforts. The Committee commends the Work Group's past efforts and fully supports its continued operation. The Committee agreed that the Interim Report would include language to reflect this position.

The Committee also heard comments from Dave Quinn, Chairman of the SMA Business Practices Work Group, who briefly described the history of the SMA Work Group. Mr. Quinn noted that one issue arising from their Work Group's discussions was how long is the manufacturer responsible for production devices conforming with type. One could operate under the premise that the time frame ends when the device leaves the production line because the manufacturer does not always have control over alterations that might be made to the device after it leaves the manufacturer's facilities. However, their work group chose, instead, to say that it extends unconditionally for 30 days after initial verification. Following this 30-day period, if a problem is encountered, the manufacturer would reserve the right to inspect the device to ascertain whether or not alterations not authorized by the original manufacturer had taken place. If the manufacturer finds no unauthorized modifications, then the device would be covered for a period of a year, including the initial 30-day period.

In considering this issue, the SMA Work Group looked at two elements:

- (1) If the manufacturer gets word that there is a device that looks like it does not meet type, the manufacturer wants to look at the device and find out why this has occurred. If the manufacturer finds out that a load cell has been abused, or that something has been changed, then the manufacturer is not responsible. But as long as the device has not been altered, the manufacturer will stand behind the production device.
- (2) How long must the device continue to meet type? The SMA Work Group's feeling is that the device must perform and look like its type for life. The SMA Work Group must write a standard which addresses repair to type. This must also be under some kind of quality assurance program. Anyone in the industry that wants to follow this procedure in the industry can do so.

Mr. Quinn indicated the SMA Work Group has not addressed the issue of repairs to the production device, and the Work Group will examine this issue after developing the basic conformity assessment system.

The Committee received comments from SMA, Mel Hankel, and other industry members who expressed support for the NTEP Business Plan Work Group's work and the NTEP Committee on the general issue of conformity assessment. Some industry members expressed concern that the proposed approach for addressing conformity assessment by examining the manufacturer's production processes might not be adequate to address the current challenges before the NTEP Committee. The Committee also heard a suggestion that the Committee and the NTEP Business Plan Work Group re-examine the existing criteria in the Administrative Policy section of Publication 14 to determine if the criteria might be slightly modified to form the basis of the conformity assessment criteria.

Administratively, the Committee reported that Barbara Bloch, Chairman of the Work Group, is retiring, and the Committee is looking for a replacement. The Committee asked that people who are interested contact the Committee with replacement suggestions. The Committee sincerely appreciates Ms. Bloch's work during her tenure as Chairman and wishes her well in retirement.

Following the Interim Meeting, the Committee was pleased to announce that Ross Andersen, Director, New York Bureau of Weights and Measures has agreed to serve as Chairman of the Work Group.

2000 Annual Meeting Action: NTEP Committee Chairman Aves Thompson reported that the NTEP Committee had successfully resolved two challenges since the 2000 Interim Meeting.

During discussion of this item at the 2000 Annual Meeting, the Committee discussed the need to refine the process for lodging appeals and challenges with NTEP. Based on the recommendations of the NTEP Business Plan Work Group, the Committee will be reviewing the current process outlined in Appendix B, Section O, "Appeals Process," of the 1990 NCWM Executive Committee report and proposing revisions as appropriate.

501-6 I NTEP Participating Laboratories and Evaluations Reports

Source: Carryover Item 501-6 of the Report of the NTEP Committee of the 84th NCWM, 1999.

2000 Interim Meeting Action: Tina Butcher provided the following updates to the Committee on NTEP laboratories' activities.

Laboratory Activities: In October 1999 Representatives from Measurement Canada, several of the NTEP Weighing Laboratories, NIST-OWM, and several U.S. companies participated in training on OIML R76 Non-Automatic Weighing

Instruments. NIST-OWM and Measurement Canada jointly organized the training, with assistance from the Scale Manufacturers Association in coordinating industry participation. Measurement Canada hosted the seminar in Ottawa, Ontario, Canada. Keith Mann and Kerry Marston, both with the Australian National Standards Commission, presented the training. Comments from participants indicated that the training was very beneficial. Participants also expressed appreciation to those who were involved in organizing the seminar and the instructors for their presentations.

The NTEP Weighing Laboratories met prior to the October 1999 Weighing Sector Meeting in Ottawa, Ontario, Canada.

NIST-OWM and NCWM extended particular thanks to Measurement Canada for hosting the seminar and to Mr. Mann and Ms. Marston for their expert training.

Laboratory Evaluations: Lynn Sebring, NIST-OWM, presented a report of laboratory evaluation activity (as of January 2000) to the Committee.

The Committee reviewed the average time frames reported for various stages of the NTEP process. Comments indicate satisfaction with the time frame for NTEP's issuing of OIML Certificates. One area of particular concern was that of the time between the Effective date (when a Certificate number is assigned) and the Issue date (when a Certificate is issued). Providing a number to the manufacturer immediately upon completion of a type evaluation enables the manufacturer to begin selling and distributing the device. However, until the final Certificate is issued, the inspector and service agencies have no information about which devices will be covered on the Certificate and under which conditions the devices can be used. Delays in the time between Effective and Issue dates can include delays in the laboratory's drafting of the CC, delays in the manufacturer review and approval of the Certificate, and delays in NIST's final processing of the CC.

Based on comments heard during the Interim Meeting, the Committee discussed alternative approaches that might be used to minimize the length of time between the Effective and Issue dates. Alternatives discussed included: (1) not issuing a CC number until the draft CC has been prepared by the laboratory and (2) requiring the manufacturer to submit a draft CC with the application. Some individuals expressed concerns over the first alternative because both the manufacturer and NTEP can contribute to the delays. There was general support for the second alternative. The Committee supported the second alternative, but noted that delays must be minimized to ensure that inspectors have the information necessary to conduct inspections.

The Committee also discussed continued concern over the use of NTEP as a testing service. Some manufacturers submit equipment that is not ready for type evaluation: rather than perform their own research, they use NTEP to identify areas of noncompliance that must be corrected. This practice results in delays for other manufacturers who are well prepared for the type evaluation process. OWM reports that it is considering implementing procedures to limit the number of failures that can occur during a type evaluation. Should the number of failures exceed the specified limit under the procedure, the manufacturer would be required to provide additional information and test data to demonstrate that the areas of noncompliance have been corrected before NTEP could re-test the device. The proposed process was reviewed with the laboratories at the last laboratory meeting and continues to be refined. Another suggestion was to require a manufacturer to submit data with the application (similar to what is currently required for load cells) demonstrating that the device is ready for evaluation. Comments during the Interim Meeting indicate general support for both approaches. The Committee indicated support for submitting test data with the application.

Mrs. Sebring noted that OWM continues to work with laboratories and manufacturers to clean up old, outstanding files. OWM will consider the alternatives presented as possible means to minimize the delays and eliminate unprepared devices from the type evaluation process. OWM will also continue to work with the laboratories to refine the proposed failure procedures.

2000 Annual Meeting Action: The Committee received a copy of an updated Participating Laboratories and Evaluations report prepared by Mrs. Sebring for the period January 1, 2000, to present. A copy of this report is included in Appendix C.

501-7 I NTETC Sectors Reports

Source: Carryover Item 501-7 of the Report of the NTEP Committee to the 84th NCWM, 1999.

Background/Discussion: The Committee heard updates on the activities of the National Type Evaluation Technical Committee Sectors as outlined below.

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The Committee noted a related issue concerning scheduling Sector meetings in Item 101-18 on the Board of Directors' 2000 Interim Report. See Item 101-18 of the Board of Directors' 2000 Final Report for additional details.

The Committee also discussed the timeliness of Sector reports. Comments indicate that the reports are being provided in a more timely manner than in the past; however, some laboratories have expressed the need to receive reports more quickly. NIST-OWM noted that laboratories are expected to apply the Sector's decisions immediately following the Sector meetings and should take necessary steps prior to the end of the meetings to ensure that they understand Sector decisions. However, NIST-OWM also recognized the importance of distributing the reports as soon as possible to ensure consistent interpretation among laboratories and manufacturers and will continue to improve the distribution process. The Committee also noted that, because of the practice of applying decisions immediately, NTEP Committee members must work to keep abreast of Sector activities and decisions.

Belt-Conveyor Scale Sector: Members of the Sector were saddened to learn of the death of Norm Johnson, former Chairman of the Belt-Conveyor Scale Sector. Mr. Johnson died in October 1999, after a five-year battle with brain cancer. He served as Sector Chairman from 1994 until his resignation in August 1999. Mr. Johnson contributed significantly to the Sector during his term as Chairman, and the Sector will greatly miss his expertise and presence.

On a more positive note, the Sector is pleased to announce that Paul Chase, Chase Technology, Inc., has agreed to serve as new Chairman of the NTETC Belt-Conveyor Scale Sector. Sector members elected Mr. Chase to the position by mail ballot in October.

The Sector has also had a change in technical advisors. Former Technical Advisor, Thomas Ahrens, left NIST-OWM in November 1999, to take advantage of a career opportunity with Lockheed Martin Corporation. The Sector will miss Mr. Ahrens' expertise and contributions. Richard Suiter, NIST-OWM, has been designated to replace Mr. Ahrens as Technical Advisor to the Sector.

The NTETC Belt-Conveyor Scale Sector last met in October 1998. A request for agenda items was distributed to the Sector in July 1999 for a possible meeting in October 1999. Insufficient items were received to warrant a 1999 meeting.

At the 2000 NCWM Interim Meeting, Mr. Suiter reported that the next Belt-Conveyor Sector meeting is tentatively scheduled for the week of September 10, 2000, in conjunction with the Weighing Sector meeting in Columbus, OH, provided that sufficient agenda items are submitted to warrant a meeting.

At the 2000 NCWM Annual Meeting, Tina Butcher confirmed that the next meeting of the Belt-Conveyor Scale Sector would be held September 12-13, 2000, in Columbus, OH. The meeting will be held in conjunction with the Weighing Sector's Annual Meeting.

[Editor's Note: Following the 2000 NCWM Annual Meeting, a memorandum was distributed announcing the cancellation of the 2000 Belt-Conveyor Scale Sector Meeting. Insufficient agenda items were received to warrant a 2000 meeting.]

For questions on the current status of Sector work or to propose items for a future meeting, contact Technical Advisor, Mr. Suiter. He can be reached by telephone at 301-975-4406, by fax at 301-926-0647, by e-mail at rsuiter@nist.gov, or in writing at NIST, 100 Bureau Drive – Stop 2350, Gaithersburg, MD, 20899-2350.

Grain Moisture Meter and NIR Protein Analyzer Sectors: The Grain Moisture Meter and NIR Protein Analyzer Sectors held a joint meeting in St. Louis, MO, in September 1999.

At the 2000 NCWM Interim Meeting, a copy of the meeting summary was presented to the NTEP Committee (see Appendix D), and Diane Lee was available to respond to Committee questions. Ms. Lee reported that the next Sector meeting was tentatively scheduled for August 2000 in Kansas City, MO. A training session on NIR devices is tentatively scheduled prior to the meeting.

At the 2000 NCWM Annual Meeting, Tina Butcher reported that the next meeting of the Grain Moisture and NIR Protein Analyzer Sectors would be held August 23-25, 2000 (beginning on Wednesday afternoon and ending on Friday afternoon) in Kansas City, MO. Mrs. Butcher reported that a technical training session on NIR devices, which was tentatively scheduled prior to the Sectors' meetings, was cancelled.

For questions on the current status of the Sectors' work, contact either of the Sector Technical Advisors, Diane Lee, NIST-OWM, or Jack Barber, J.B. Associates. Ms. Lee can be reached by telephone at 301-975-4405, by fax at 301-926-0647, by e-mail at diane.lee@nist.gov, or in writing at NIST, 100 Bureau Drive – Stop 2350, Gaithersburg, MD, 20899-

2350. Mr. Barber can be reached by telephone at 217-483-4232, by fax at 217-483-3712, by e-mail at jbarber@cityscape.net, or in writing at J.B. Associates, 10349 Old Indian Trail, Glenarm, IL, 62536.

Measuring Sector: The NTETC Measuring Sector met on September 24-25, 1999 in Olympia, WA. The Sector has also had a change in Technical Advisors. Former Technical Advisor, Thomas Ahrens, left NIST-OWM in November 1999 to work for Lockheed Martin Corporation. The Sector will miss Mr. Ahrens' expertise and contributions. Richard Suiter, NIST-OWM has been designated to replace Mr. Ahrens as Technical Advisor to the Sector.

At the 2000 NCWM Interim Meeting, the NTEP Committee received a copy of the meeting summary prepared by Mr. Ahrens and Juana Williams (see Appendix E). Current Technical Advisor, Richard Suiter, was available to respond to Committee questions. Mr. Suiter reported that the next Sector meeting was tentatively scheduled for October 2000 in Austin, TX, in conjunction with the Southern Weights and Measures Association Meeting.

At the 2000 NCWM Annual Meeting, Mrs. Butcher reported that the next meeting of the Measuring Sector was scheduled for October 6-7, 2000, in Austin, TX.

For questions on the current status of Sector work or to propose items for a future meeting, contact Mr. Suiter. He can be reached by telephone at 301-975-4406, by fax at 301-926-0647, by e-mail at rsuiter@nist.gov, or in writing at NIST, 100 Bureau Drive – Stop 2350, Gaithersburg, MD, 20899-2350.

Weighing Sector: The Weighing Sector met on October 4-5, 1999, in Ottawa, Ontario, Canada. The Sector thanks Measurement Canada for assistance in coordinating the October 1999 meeting.

At the 2000 NCWM Interim Meeting, a copy of the meeting summary was presented to the NTEP Committee (see Appendix F), and Richard Suiter was available to respond to Committee questions. Mr. Suiter reported that the next Sector meeting was tentatively scheduled for September 2000, in Columbus, OH.

At the 2000 NCWM Annual Meeting, Mrs. Butcher confirmed that the next meeting of the Weighing Sector was scheduled for September 10-12, 2000, in Columbus, OH, in conjunction with the 2000 Meeting of the Belt-Conveyor Scale Sector.

[Editor's Note: Following the 2000 NCWM Annual Meeting, a memorandum was distributed announcing the cancellation of the 2000 Belt-Conveyor Scale Sector Meeting. Insufficient agenda items were received to warrant a 2000 meeting.]

For questions on the current status of Sector work or to propose items for a future meeting, contact Mr. Suiter. He can be reached by telephone at 301-975-4406, by fax at 301-926-0647, by e-mail at rsuiter@nist.gov, or in writing at NIST, 100 Bureau Drive – Stop 2350, Gaithersburg, MD, 20899-2350.

2000 Annual Meeting Action: The Committee heard updates of Sector activities from Mrs. Butcher as outlined in the information above.

The NTEP Committee reported that electronic and hard copies of the 2000 edition of NCWM Publication 14 have been provided to the NCWM Headquarters for publication. Publication 14 will be published and available for purchase. Contact the NCWM Headquarters for additional details.

501-8 V NTEP Policy: Changes to the Definition of an "Inactive" Certificate of Conformance

(This item was adopted.)

Source: Carryover Item 501-11 of the Report of the NTEP Committee to the 84th NCWM, 1999. (Original Source: Central Weights and Measures Association)

Recommendation: Revise NCWM Publication 14, Section 1, Administrative Policy and Procedures, Part N, Subsection 4, as follows:

N. Status of Certificate of Conformance, Maintenance Fee

.....

4. Inactive Status

An ~~inactive~~ Certificate of Conformance is a Certificate which was previously ~~a~~Active, but the devices are no longer being manufactured ~~or remanufactured~~ for commercial applications. However, ~~Devices already manufactured, installed, or in inventory, but not yet sold, may be used, sold, repaired, and resold under an Inactive Certificate of Conformance already installed may be used, repaired, and resold under an Inactive Certificate of Conformance. Provided NTEP is supplied with the serial number or date code of the last device of that model manufactured for commercial applications, new devices already manufactured or in inventory, but not yet sold, may be sold under an Inactive Certificate of Conformance. If NTEP is not supplied with the last serial number or date code, new devices already manufactured or in inventory, but not yet sold, may be sold under an Inactive Certificate of Conformance for a period of 12 months after the date that the Certificate is made Inactive.~~

Justification: The amendment would provide weights and measures officials with the information needed to know what devices the Active Certificate of Conformance covers and the means to identify those devices that are manufactured after the Certificate becomes Inactive. If the manufacturer does not provide the serial number of the last manufactured device under the Active Certificate, devices can continue to be sold for 12 months after the date on which the Certificate becomes Inactive. Devices sold after this date would not be traceable to an NTEP Certificate of Conformance.

Background/Discussion: At the 1999 Interim Meeting, the Committee heard comments that not all manufacturers use a serial number to track the manufacturing history of a device; instead, many use a date code which includes information relevant to the manufacture of a device. The technical Sectors of NTEP submitted similar comments. The Committee agreed that the proposed language should be broadened to recognize other means that a manufacturer might use to identify the date of manufacture.

During the Committee's open hearings, people expressed concerns about how the proposal would impact equipment in a distributor's stock when the original manufacturer goes out of business. If the original manufacturer does not supply the last serial number or date code, this may result in a penalty to the distributor who would not then be able to sell equipment in stock. The Committee indicated that the intent of the proposal is not to penalize the distributor or the original equipment manufacturer, but is to assist weights and measures officials who have difficulty determining whether or not a particular device is covered under an Inactive Certificate of Conformance. To address the concern over equipment in a distributor's stock, the Committee is considering incorporating into the proposed language a time frame that would provide adequate time for the sale and distribution of equipment in stock. The Committee discussed a possible time frame of 12 months; however, it would like to hear comments on a reasonable time frame. Some indicated that most weights and measures jurisdictions would work with distributors to help resolve such situations rather than unduly penalize them.

The Committee also heard concerns about how the proposed criteria apply to remanufactured equipment. The Committee noted that the S&T Committee is reviewing the issue of remanufactured equipment. The proposal presented by the NTEP Committee is simply intended to assist weights and measures officials in applying the NTEP regulation in their jurisdictions. It is not intended to define when a particular device is considered to be repaired or remanufactured.

The Committee received written comments from George Anderson, DurEquip, and heard comments during its open hearings at the 1999 Interim Meeting indicating that the language in the original proposal needs clarification. After reviewing several proposed alternatives, the Committee agreed on the language outlined above. Because of the many comments heard on this issue during the Interim Meeting, the Committee decided to retain this as an information item to allow for additional study. The Committee is interested in hearing alternatives which might provide the information that weights and measures officials need to determine whether or not a device is covered by an Inactive Certificate of Conformance.

At the 1999 Annual Meeting, the Committee heard few additional comments on this item. The Committee encourages interested parties to study the proposed language and provide comments to the Committee.

2000 Interim Meeting Action: Comments heard during the Interim Meeting generally supported the proposed changes to the definition of an "Inactive" Certificate. Some comments indicated that the proposed language refers to devices no longer being "manufactured or remanufactured"; however, it is difficult to determine exactly when a device is no longer being remanufactured. Comments also indicated that, since the Task Force on Remanufactured Equipment is studying

terminology used to address remanufactured equipment, the Committee might want to consider deleting the reference to remanufactured equipment.

The Committee also discussed comments that it received regarding how the proposed language would affect devices which are in the distribution pipeline at the time a CC becomes Inactive. The Committee recognized that if the CC holder does not supply the last serial number or date code, this could penalize companies that hold devices in the distribution pipeline because they have no control over the Certificate holder. The Committee decided that a time frame should be added to the language to allow the devices in the pipeline to be sold and distributed, even if the last serial number is not supplied.

Based on these comments, the Committee decided to delete the reference to remanufactured equipment and to add a 12-month time frame as shown in the recommendation.

2000 Annual Meeting Action: The language proposed by the Committee in its 2000 Interim Report specifies that the manufacturer supplies NTEP with this information. At the 2000 Annual Meeting, the Committee heard comments that not all original equipment manufacturers apply the serial number or date code to devices; in some cases, the private label company applies this information to the device. To recognize this scenario, the Committee revised the proposed language as shown in the recommendation above to state only that NTEP must be supplied with the information, without specifying who must supply the information.

501-9 V Private Label Certificates of Conformance

(This item was adopted.)

Source: Carryover Item 501-12A (Original Source: NIST-OWM NTEP Management)

Recommendation: Modify NCWM Publication 14, Section 1, Administrative Policy and Procedures, Part E, as follows:

E. Request for Type Evaluation

...

A company that is marketing a device (e.g., scale, indicator, or load cell) from a manufacturer and re-labeling it under its own name must submit a separate request for a Certificate of Conformance using the forms found in Appendix D. The forms include a statement that, except for the change in proprietary markings, the device is not changed from the original type. The original manufacturer must verify that:

- (1) the manufacturer is providing the device to the company;*
- (2) the re-labeling is authorized by them; and*
- (3) the device provided to the company is identical to the original type for which the manufacturer has received a Certificate of Conformance.*

If a company re-labels equivalent devices (e.g., load cells) from multiple suppliers, the company must:

- (1) satisfy the requirements above for each manufacturer; and*
- (2) assign a unique model designation to each type from each manufacturer. The same model series may be used, but unique prefixes or suffixes must be used.*

The private label agreement forms the basis for NTEP to determine metrological equivalence of a private labeled device with a device produced under a CC issued to an original equipment manufacturer (OEM). The OEM and the holder of a private label CC must notify NTEP of any change in status of the private label agreement as it relates to NTEP. The private label CC will be rendered INACTIVE as of the date of the cancellation of the private label agreement. If the OEM CC becomes INACTIVE, then the private label CC will also become INACTIVE.

Background: Publication 14, Part E, of the NTEP Administrative Policy and Procedures allows a company to apply for an NTEP Certificate of Conformance (CC) under a private labeling agreement sometimes referred to as a "piggyback"

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Certificate. The company that re-labels the devices must apply for a CC in its own name. The original equipment manufacturer (OEM) must give permission for that company to use the results of the evaluation. The forms found in Appendix D of Publication 14 must be completed by the company requesting the CC and the OEM; these forms confirm that the devices provided to the private labeler are the same as the devices originally evaluated under the OEM's CC. The forms also confirm that the company that private labels the devices does not modify them in any way other than marking the devices with its own proprietary information. This documentation ensures that the devices that are privately labeled are metrologically equivalent to the devices evaluated under the original CC.

NTEP policy does not specify how a private label CC is affected if one or the other party cancels the private label agreement. NTEP is not concerned with the business details of the agreement; however, there is concern that canceling the agreement also cancels the terms of the agreement that relate to the metrological equivalence of the private-labeled devices. Although the metrological equivalence of devices already produced and sold was guaranteed through the original agreement, the metrological equivalence of devices produced after the cancellation of the agreement has not been guaranteed. Consequently, it is proposed that a private label CC be changed to an INACTIVE status when one or the other parties cancel the private-label agreement. Note that an inactive status does not affect devices already in service.

During discussions of this issue at the 1999 Interim Meeting, questions were raised concerning how a private-label CC will be affected if the OEM makes its parent CC Inactive. The Committee agreed to modify the proposed language to indicate that the private-label CC will become Inactive if the parent CC becomes Inactive. A particular concern expressed how the devices in the private-labeler's stock will be affected. The Committee noted that, as proposed in Item 501-11, the OEM and the private-labeler must provide the last serial number or date code to NTEP. Any devices in either the OEM's or the private-labeler's stock would continue to be covered by the Inactive CC as long as this required information is provided to NTEP.

This item was originally presented as a voting item on the Committee's 1999 Annual Meeting Agenda. At the 1999 Annual Meeting, the Committee heard comments indicating that the proposed language may need to be changed to better reflect the scenarios under which changes to private label agreements might affect the status of related Certificates of Conformance. To allow the opportunity for additional comments and development of the language, the Committee changed this item to an informational status.

2000 Interim Meeting Action: The Committee received comments from SMA suggesting elimination of the last sentence and revisions to the language to eliminate redundancies. The Committee agreed that the reference to either party who canceled the agreement was redundant and deleted the language from the original proposal as shown above in the recommendation.

The Committee discussed eliminating the last sentence; however, it believes that the last sentence should be retained. The Committee considered the situation where the OEM decides to discontinue manufacturing a device under the OEM name, but the OEM maintains an agreement with the private labeler to continue producing devices under the private label agreement. The Committee also recognizes that the private labeler is ultimately responsible for the devices produced under a private-label CC. However, since the basis for issuing the private-label CC is based on the OEM's production processes, the Committee felt that there should be assurances that the link between the two companies is maintained, even if the OEM no longer produces the equipment under its own label. Particularly in light of the work being done by NCWM, Inc., to establish a program to ensure that production is consistent with the type evaluated, the Committee believes that this link is important and that the last sentence should be retained.

During discussions of this item, the Committee decided to change the title of this item to better reflect its content and for easier reference.

2000 Annual Meeting Action: The Committee heard no opposition to the proposal outlined in the recommendation above.

501-10 W Identifying a Private Label Certificate of Conformance

(This item was withdrawn.)

Source: Carryover Item 501-12B (Original Source: NTEP Committee)

Recommendation: Add the following text to Publication 14 Section E. Request for Type Evaluation:

When a new Certificate of Conformance (CC) is created for a company under a private label agreement, the new CC must reference original CC number.

Background/Discussion: During discussion of Item 501-12A (Item 501-9 on the Committee's 2000 Agenda) at the 1999 Interim Meeting, the Committee heard comments indicating that field officials and NTEP administration are experiencing difficulty identifying NTEP Certificates of Conformance which have been issued as a result of private-label agreements. NIST-OWM reported instances where the company that is private labeling a device has difficulty keeping track of the original equipment manufacturer (OEM) that supplied the device covered by the private-label Certificate of Conformance. This occurs particularly when the manufacturer holds multiple CCs for similar device types such as load cells. The NIST OWM also reported finding OIML Certificates which reference privately labeled load cells with the OEM's name. Facilitating the identification of the OEM (or the OEM's CC) assists weights and measures officials and NTEP administration to resolve problems with non-compliant devices and to maintain private label CCs consistent with the parent CC.

Some manufacturers expressed concern over making the private label status of their CCs public knowledge. Some companies prefer that their customers do not know that another company manufactures the devices.

The Committee believes that identifying CCs issued under a private label agreement is necessary; however, it does not want to create undue hardship for either the private labeler or the original equipment manufacturer. The Committee recognizes and appreciates possible marketing concerns in such cases, but believes that it is essential that the field officials receive the information needed to use the CC efficiently. The Committee also heard alternate suggestions to address the problem, such as: (1) including a statement that the CC is a private-label CC, but not the parent CC number; (2) including a code in the CC number to indicate that the CC is a private-label CC; and (3) providing a cross-reference list of CC numbers and their parent CCs. Comments indicate that those who support the proposed language would prefer the identification of the parent CC number on the private label CC.

The Committee included this item on its agenda to enable further study and to hear additional proposals that might assist the field official and NTEP Administration in addressing these concerns.

At the 1999 NCWM Annual Meeting, the Committee heard additional comments from SMA and Rice Lake Weighing opposing the proposed language. Some comments indicated that a private label Certificate should mirror the original "parent" Certificate; however, it was noted that not all companies holding private label Certificates request the same range of sizes, capacities, and other parameters as that requested by the original manufacturer. Weights and measures officials noted continued difficulty in locating information involving private labeled devices under the current system. The Committee solicits additional comments on how these concerns might best be resolved.

2000 Interim Meeting Action: The Committee continues to recognize the difficulty that field officials have in locating test information on private-label Certificates. The Committee heard industry comments expressing concern about identifying the manufacturer who holds the parent CC on the private-label CC. The Committee also heard comments from other industry members indicating that identifying the parent Certificate number on the private label CC would not be a problem if done inconspicuously. One suggested approach was to include the parent CC information in the "Test Conditions" section of the private label CC. The Committee also considered including the parent CC information in a code format.

The Committee also discussed including the parent Certificate information in parenthesis following the name of the person who conducted the evaluation. This is similar to what is currently done for an addendum to a CC. For example: "Tested by: J. Doe (97-123)," where the number 97-123 would refer back to the parent CC.

The Committee maintains its position that information must be included on the private-label CC to enable the inspector to trace it back to the parent CC. The Committee considered specifying how the information should appear on the CC, but

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preferred to state only that the information must be included, but not be specific about the location of the information. In recognition of concerns about identifying the name of the original manufacturer/holder of the parent CC, the Committee modified its original proposal as recommended above.

2000 Annual Meeting Action: The Committee received a number of comments from industry and weights and measures officials in opposition to this item. Industry claimed that identifying the OEM on the private label certificate would violate contractual confidentiality agreements between the OEM and the private label Certificate holder; therefore, NTEP needs to consider such information as proprietary. The Committee also received comments from the original submitter of this item suggesting that this item be withdrawn based upon these comments. The submitter felt that other equally effective administrative mechanisms such as fields in the NTEP database might be used by NTEP laboratories to obtain the information needed to identify a private label CC. The Committee agreed that, while the item has merit, comments indicate that marking the CC is not the only mechanism for identifying a CC as a private label CC. Consequently, the Committee withdrew this item from its agenda.

A. Thompson, AK, Chairman

M. Hile, AR

L. Straub, MD, NCWM Chairman-Elect

S. Malone, NE

G. West, NM

R. Andersen, NY

G. W. Diggs, VA, NCWM Chairman

J.A. Rogers, VA, NCWM Treasurer

NIST Technical Advisor: T. Butcher

National Type Evaluation Program Committee

Appendix B

Proposed Alternative for Production Meets Type and Challenges to a Certificate of Conformance NTEP Business Plan Work Group October 1999

(Note: The following proposals are intended to replace previous proposals presented by the NTEP Business Plan Work Group and included in the NTEP Committee's 1999 NCWM Final Report as Appendix C and Appendix D.)

Draft Proposals

Proposed additions to Publication 14's administrative procedures:

Part A. Administration:

1. Amend the NTEP application to include a conditional statement that in the event that the device fails to meet its performance requirements, the manufacturer agrees to submit additional production models for future testing. This agreement will stipulate that the manufacturer shall pay for the cost of such production device testing. The number of devices required to be submitted will need to be determined. (Note: given comments on this item, it was suggested that this be held for redrafting after the production meets type discussion matures further.)
2. All applicants agree to provide proof that production devices will meet type. Demonstrating that production devices will meet type may be satisfied by: (Note: to be developed further.)

A device manufacturer can adopt an NTEP approved production meets type program, or can adopt its own program provided that it can meet NTEP criteria. It is anticipated that the criteria under either option would essentially be the same. It may be possible to allow a company to elect to substitute production lot testing under some defined schedule in lieu of a "production meets type" quality program. This last option would be structured such that it would be uneconomical for large production levels. The NTEP Committee would be responsible for approving production meets type programs for device manufacturers.

NTEP Laboratory Process, Initial Verification Process and Subsequent Verification Process

Note: This proposal contains three parts: one to address the NTEP laboratory process, one to address initial verification and one to address the subsequent verification process.

Part I. Type Evaluation Process

Proposal:

That if a device submitted to an NTEP laboratory fails in specific metrologically significant areas (to be determined, possibly by device type), the device is returned to the manufacturer. The manufacturer may correct the device and reapply for type evaluation, including payment of application fees, and submission of a test data package to assure NTEP compliance. The device may be placed at the end of the laboratory testing queue.

Part II. Initial Verification Process

Proposal:

That an initial verification system be developed within NTEP that would establish specific criteria (possibly by device type) for metrologically significant areas to be evaluated and reported during the initial installation by weights and measures officials (and possibly service agencies). Only devices found to be deficient in the specific criteria areas would be entered into the system.

(Comment: consideration should be given to types of devices and applications where the installation can have a major effect on the performance of the device, e.g., Vehicle, hopper, railroad and belt- conveyor scales; loading rack and VTM meters. The initial verification should be limited to the weighing/measuring element level.)

That a reporting form containing appropriate information (to be developed) be made a part of the examination procedure outlines (EPO's), and become a cooperative effort of weights and measures jurisdictions. (Possible to establish a pilot program to evaluate effectiveness. Test criteria, testing standards, inspector training, etc., would all need to be considered in developing this proposal.)

That a database be developed by NTEP to track the critical criteria and that performance standards be established to notify NTEP when a number (to be determined) of devices have failed the initial verification.

That criteria for device reevaluation be established to require a manufacturer (at the manufacturer's expense) to resubmit production devices to NTEP.

That criteria be established for the reevaluation if non-conformance to type is found (corrective action or withdrawal of the Certificate of Conformance).

Part III. Subsequent Verification Process

Proposal:

To establish a very limited set of criteria (to be determined) for reporting by weights and measures jurisdictions (and service agencies?) in areas of performance which would continue to be related to production meets type.

As with "production meets type," specific evaluation criteria would need to be established to determine if a reevaluation is necessary. (To be further developed.)

Part B. Challenges to a Certificate

A challenge to an existing certificate may be brought by any weights and measures jurisdiction or by any interested party. The challenge shall list the name of the manufacturer, the certificate number, the specific model number of the device in question, the alleged deficiency to Handbook 44, and supporting documentation of the allegation. The challenge shall be submitted in writing along with the required information to the Chairman of the NTEP Committee. (Possibly through NIST). The NTEP Committee Chair will review and, if warranted, forward the information to the NIST NTEP Administrator. The NTEP administrator will assign an NTEP laboratory (or other competent representative) to conduct an investigation of the device in question.

Procedures to Address a Challenge an NTEP Certificate of Conformance (CC)

(Note: These procedures were developed to address one specific device type. Modifications to the procedure will be made on a case-by-case basis to best address the specific type of device being challenged.)

The NTEP Committee will review the information and data provided by entity lodging the challenge. If the NTEP Committee finds there is sufficient information to continue, the following steps will be taken. If insufficient information is provided, the NTEP Committee will contact the challenger and identify the information required.

The NTEP Committee will consult with NIST statistical staff to determine the number of devices that would need to be tested and how the results should be analyzed relative to selecting additional devices for test.

Locate sources of supply for the model of device being challenged. Attempt to determine the approximate number of the device in supply. Ask the supplier(s) if the manufacturer supplies special instructions, mountings, or other peripheral equipment for installing and using the device.

Send a letter to the entity lodging the challenge stating that NTEP will proceed with the complaint. Indicate that they may be responsible for the costs of the evaluation if the results of the evaluation show the devices meet the requirements. Note that, unless NTEP hears from the challenger in 10 days, NTEP will proceed with the challenge. If the challenger objects to this condition, then NTEP will consider the challenge closed. The letter will also outline the procedures that NTEP will follow in addressing the challenge.

NTEP Committee

A letter will be sent to the company whose Certificate of Conformance is being challenged to notify it of the challenge and indicate the steps that NTEP will follow to address the challenge. The letter will indicate that, should the devices fail to meet requirements, the company holding the CC will be assessed the fees for testing and the CC may be withdrawn. NTEP recognizes that factors such as peripheral equipment and installation can be significant in device performance. If the company wishes to supply the required information or equipment or to provide additional instructions, it has the option of providing them. If the manufacturer wishes to participate in the testing he is welcome to do so. If the manufacturer objects to the proposed procedure, he must contact NTEP within two weeks. Note that the CC holder can request to have more cells tested than prescribed by NTEP during the challenge process; however, the CC holder is responsible for the costs of the additional testing. Objections to the proposed procedures will be addressed on a case-by-case basis.

The testing process will begin with NTEP obtaining the devices to be tested. Two production devices of the model and capacity being challenged will be selected. An attempt will be made to get the devices from different distributors.

One device will be submitted to NTEP for testing.

If the resulting test data does not correspond with test results submitted by the entity lodging the challenge (i.e., the device passes or its performance is significantly different), the challenger will be notified of the results by phone and in writing. The challenger will be asked whether or not he wants to proceed since he may be responsible for additional costs. If the challenger wishes to proceed, then NTEP will proceed to the next step.

If the first device fails, the second device is tested as described below.

The next device will be tested.

If the device passes, the complaint is resolved and both parties are notified.

If the device fails, then the holder of the NTEP CC is to be contacted and asked if he wishes to proceed to test more devices in accordance with the statistical sampling plan. If the CC holder elects to take corrective action at that point, he will be asked to voluntarily suspend the Certificate, which would also require him to recall all devices in his and the distributors' existing stock. If NTEP continues with testing of the devices and find that the devices continue to fail, NTEP can proceed to withdraw the Certificate and notify the States.

Cost of Investigation:

Initially any costs incurred in the conduct of an investigation will be paid from the NTEP fund of the NCWM. If the investigation finds that production did not meet type, the entire cost of the investigation will be assessed to the manufacturer of the device. To discourage frivolous challenges, if a challenge to a certificate is initiated by a competing manufacturer and the investigation finds that production does in fact meet type, the entire cost of the investigation may be assessed to the entity that initiated the challenge. A deposit may be required at the time of submission of the challenge. (Amount to be determined).

NTEP Initiation of Investigation:

If NTEP has reason to believe that production of a model does not meet type, the same procedures will be followed. The reason for this type of investigation could come from complaints by several jurisdictions or information from a National Data Base which provides sufficient information to indicate that production does not meet type. In this type of investigation, if it is found that production meets type, NTEP will absorb the cost of the investigation. If it is found that production does not meet type, the cost will be assessed to the manufacturer of the device.

Devices Requiring Field Evaluation:

If a challenge is brought against a device or system that requires field evaluation, only the device which was brought into question will initially be evaluated. If the device or system passes the evaluation, it will be assumed that production meets type. If the device fails, a second device of the same type will be evaluated. If the second device fails, it will be determined that production does not meet type and the procedures outlined above will be followed.

Due Process Procedures: See Publication 14.

Appendix C – Participating NTEP Laboratories Report * July 2000

Activity	1996**	1997	1998	1999	2000 as of 6/30/00
Number of Applications Received ¹	386	387	321	335	175
Number of Mutual Recognition Applications Received	38	68	68	61	40
Number of Type Evaluations Performed ²	300	316	311	250	66
Number of Activities Assigned ³	574	652	598	528	290
Number of CCs that became EFFECTIVE	310	299	253	338	146
Number of CCs ISSUED	322	279	260	345	224
Number of Requests WITHDRAWN	80	81	52	86	27
Average Time (weeks) to Perform Activities for Successful⁴ Type Evaluations					
"Date Assigned" to "Equipment Received"	10	8	11	8	9
"Equipment Received" to "Type Evaluation Complete"	7	6	7	7	7
Type Evaluation Complete" to "CC Effective"	5	2	4	8	5
"CC Effective" to "To NIST"	16	14	9	12	17
"To NIST" to "CC Issued"	7	9	8	6	6
"Date Assigned" to "CC Issued"	43	44	36	47	42

* This report is designed to show the amount of activity in all the labs involved in the National Type Evaluation Program. In July 1998 a new database was put into operation. While all information from the old database was converted into the new database, some old records may be incomplete.

** 1996 figures may be inflated due to government furlough in 1995.

¹ 3 OIML Applications received in 1999, 1 OIML Application received in 2000.

² If a device fails a type evaluation (i.e., an actual lab or field test), a re-test is considered a new type evaluation.

³ Many type evaluations and applications require the assignment of multiple labs in order to accomplish one evaluation. In past years, one request was recorded as one laboratory doing the work regardless of how many labs were involved in the evaluation. Additionally, multiple tests may need to be performed in order to accomplish one evaluation. For example, the range of capacities of a load cell family may include testing one capacity in California, one by the Force Group at NIST, and the CC may be drafted by someone in the Office of Weights and Measures at NIST. Thus, three (3) activities were necessary for this particular load cell family to get a CC. Additionally, if a device fails type evaluation one (1) time and had to be re-tested, two (2) activities were necessary to result in one CC.

⁴ An evaluation in which the device does not fail at any point. The average times do not include applications for Grain Moisture Meters because of their unique testing and Phase II calibration process.

Participating Laboratories Evaluations

Activity	CA	MD	NY	OH	FG	NIST	OTHER	TOTAL
Number of Applications Received								
1996 ¹	75	29	29	68	17	138	30	386 ¹
1997	62	36	27	100	30	103	29	387
1998	52	25	32	74	21	78	28	321
1999	44	28	18	56	11	149	29	335
2000 as of 6/30/00	26	19	7	46	9	46	22	175
Number of Type Evaluations² Performed								
1996	62	85	31	80	9	1	32	300
1997**	72	56	46	93	21	--	28	316
1998	71	51	38	100	24	3	24	311
1999	52	45	28	77	23	6	19	250
2000 as of 6/30/00	9	12	6	28	1	--	10	66
Number of Paper Updates³ Issued								
1996	2	--	1	1		90	--	94
1997	11	2	3	3		76	--	95
1998	5	--	2	12		59	1	79
1999	12	1	1	2		133	--	149
2000 as of 6/30/00	2	--	--	4		45	--	51
Number of Effective Certificates								
1996	49	22	13	49	18	124	35	310
1997	51	15	18	66	17	111	21	299
1998	31	13	10	82	17	76	24	253
1999	53	23	12	52	17	158	23	338
2000 as of 6/30/00	19	11	7	32	5	63	22	146
Number of Certificates Issued								
1996	59	18	18	73	22	110	22	322
1997	42	23	19	66	10	86	33	279
1998	37	14	10	79	18	73	29	260
1999	56	10	13	57	24	162	23	345
2000 as of 6/30/00	22	18	8	41	8	110	17	224

¹ Number may be inflated due to government furlough in December 1995.

² Type Evaluation indicates an actual lab or field test.

³ A paper update includes any activity that does not require testing, i.e., private labeling requests, error corrections, non-metrological changes to CC, etc.

**There was a discrepancy in the manner in which the participating labs recorded data; the results, therefore, may be skewed.

**Appendix D - NTETC Grain Moisture & NIR Protein Sectors
September 1999 Meeting Summaries**

**National Type Evaluation Technical Committee
Grain Moisture Meter (GMM) Sector
September 8-9, 1999, St. Louis, MO
Meeting Summary**

Agenda Items

- *1. Election of Sector Chairperson
2. Proposed Test Weight per Bushel Criteria for Section 5.56(a) of NIST Handbook (HB) 44
3. Proposed Change to Publication 14 - Use of Manufacturer Supplied Data in NTEP Calibration Updates
4. Review of Evaluation Procedure Outlines (EPOs) and Test Procedures for the Field Evaluation of GMM Devices
5. Update on the Status of the Interagency Agreement for Funding the Ongoing Calibration Program (OCP)
6. Update on NTEP Type Evaluation and OCP (Phase II) Testing
7. Status of NTEP Meters in the Field - Review of Data from State Inspections
8. Process for Making Midyear Changes to NTEP GMM Certificates of Conformance
9. Fees for NTEP Applications and Evaluation of Grain Moisture Meters (Phase I)
- *10. Update on the Structure of NCWM and the Organization of NTEP
11. Report on the 1998 NCWM Annual Meeting and the 1999 NCWM Interim and Annual Meetings
- *12. Time and Place for Next Meeting

Note: Because of common interest, items marked with an asterisk (*) were considered in joint session of the NIR Grain Analyzer and the Grain Moisture Meter Sectors.

1. Election of Sector Chairperson

Richard (Will) Wothlie, Maryland Weights and Measures, was re-elected to the post of Chairperson for both the Grain Moisture Meter Sector and the Near Infrared Grain Analyzer Sector by unanimous vote of those present. Under the rules adopted by the Sector in March of 1996, he will serve for a 3-year term or until a successor is elected.

2. Proposed Test Weight per Bushel Criteria for Section 5.56(a) of NIST Handbook 44

Background: At least two NTEP Grain Moisture Meters have the capability to automatically provide an indication and recorded representation of test weight per bushel (TW). Because of unrealistic tolerances in the existing Code, the TW indications of GMMs are typically not allowed to be used for commercial transactions. For this reason manufacturers of GMMs have programmed their devices to either display or record words such as "approx.," "approximate," or "estimated" by the TW reading when the TW feature is enabled. Enforcement varies from state to state. Some states do not allow moisture meters with TW capability to display TW. Others allow "approximate" TW to be displayed, but require that a notice be posted on the meter to the effect that the TW indication is an approximation and is not approved for determining discounts. Since March 1996, the Sector has had many discussions on the criteria for TW in NIST HB 44. Several presentations were given on the current standard and on other standards used for this measurement. At its September 1997 meeting, the Sector agreed that priority should be given to drafting changes to the Grain Moisture Meter Code to specify field test methods and reasonable tolerances. At its March 1998 meeting, the Sector reviewed a draft of proposed changes to the Code which was subsequently sent out for letter ballot. In response to Committee Ballot 84-03 to add the proposed changes to NIST HB 44, Section 5.56(a), most of the Sector members agreed with the need for criteria, but were not in agreement with the proposed tolerances. The results of the ballot were as follows:

Affirmative	Affirmative (but disagree with tolerances)	Negative	Abstain
6	2	7	1

Discussion: One member suggested that the Sector look at the tolerance issue more broadly, with a separate standard covering automatic test weight per bushel (TW) devices and tolerances targeted to the needs of the application. It was noted that the Grain Inspection, Packers and Stockyards Administration (GIPSA) would soon be evaluating a prototype automatic TW apparatus which might have tolerance requirements more stringent than moisture meters can achieve. Another member was of the opinion that, to be acceptable to the trade, TW performance tolerances would have to be the same for both stand-alone automatic TW devices and moisture meters with TW capability. It was also pointed out that it would be much easier to add to the Grain Moisture Meter (GMM) code than to develop a separate code. If required, the development of a separate code for stand-alone automatic TW apparatus could be considered later.

Dr. Richard Pierce, GIPSA, presented repeatability data for the official TW apparatus based on two TW values collected on each moisture sample during the 1998 Phase II On-going Calibration Program (OCP). Data summarizing GIPSA system-wide TW using the official TW apparatus was also presented. These data suggested that the tolerance groups to which some of the grain types had been assigned should be reconsidered. The Sector agreed that three tolerance groups would be sufficient. Corn and oats would be assigned to the group with the largest tolerance; all classes of wheat would be assigned to the group with the smallest tolerance; and soybeans and all other NTEP grains/oil seeds would be placed in the middle tolerance group.

After lengthy discussion, tolerances of ± 0.8 pounds per bushel for corn and oats; ± 0.5 pounds per bushel for all classes of wheat; and ± 0.7 for soybeans, barley, oats, rice, sunflower, and sorghum were proposed for further study. Although several members opposed adopting the proposed tolerances and groupings for the following reasons: 1) difficult to meet the proposed tolerance for wheat; 2) difficult to obtain samples for field test; and 3) not discriminating enough for corn, they agreed to consider them for further study.

A number of enforcement issues were raised by some of the Sector's W&M members:

- Assuming that the proposed changes are adopted, and that a model is NTEP approved for TW, if a device of that same model passes a field test for moisture, but fails the field test for TW, can it be used for moisture if the TW feature is turned off?
- Will GMM's manufactured or placed in service after January 1, 1998, but prior to the adoption of the proposed changes, be allowed to continue to display (or record) an "approximate" or "estimated" TW for batching or screening purposes?
- The proposed change applies only to Sec. 5.66(a). Should pre-NTEP meters and those manufactured or placed in service before January 1, 1998, be allowed to continue to display an "approximate" or "estimated" TW?

Although these enforcement issues are up to individual jurisdictions to decide, several possible scenarios were suggested assuming that the proposed changes are adopted and that at least one GMM is NTEP-approved for TW:

- For all jurisdictions:
GMMs which are NTEP approved for TW shall not display or record any words indicating that the TW is "approximate" or "estimated," and they must pass the field inspection tolerance tests.

A GMM of the same type as one which is NTEP-approved for TW, but which was manufactured or placed in service before type approval was received for TW, should not be allowed to display "approximate" or "estimated." If the TW feature is to be used, the device should be returned to the manufacturer for up-grading, and it must pass the field inspection tolerance tests.
- For jurisdictions allowing the continued use of "approximate" TW:
For GMMs which do not have NTEP approval for TW (regardless of date of manufacture):

If allowed to be used for TW, the recorded TW indication should indicate that the TW is "approximate" or "estimated," and a notice should be posted on the meter to the effect that the TW indication is an approximation not approved for determining discounts.

- For jurisdictions that never allowed the use of "approximate" TW:
Only devices which are NTEP approved for TW are allowed to display or record TW, and the devices must pass the field inspection tolerance tests.
- For jurisdictions ending the use of "approximate" TW:
If enforcement is made retroactive, the jurisdictions may have to address questions from elevators previously allowed to use "approximate" TW for screening or batching information . On the other hand, if enforcement is applied only to devices manufactured or put into service after the proposed code changes are adopted, buyers of new devices which have not been NTEP approved for TW may question why neighboring elevators are allowed to continue to use an older device of that type for TW.

To give manufactures a better idea of how the proposed code might be applied when it came to type approval, a subcommittee was formed to draft additions to the test procedures and checklist of NCWM Publication 14 for the evaluation of GMMs incorporating test weight per bushel capability. The subcommittee was asked to have a draft ready for consideration by the Sector at its next meeting. The individuals expressing a desire to serve on this subcommittee included:

John Barber	JB Associates - GMM Sector Technical Advisor
Randy Burns	Arkansas Bureau of Standards
Cassie Eigenmann	DICKEY-john Corp.
Charles Hurburgh	Iowa State University, Agricultural Extension Service
Angelo Losurdo	Seedburo Equipment Co.
Richard Pierce	GIPSA, representing the NTEP Laboratory

Several State Sector members agreed to conduct a field evaluation to further evaluate the proposed tolerances and test methods. Dr. Hurburgh agreed to draft a form and develop the protocol for this field evaluation. A report of the field test results will be presented to the Sector for review at its next meeting. States which agreed to participate included:

Arkansas	North Carolina
Illinois	Maryland
Nebraska (tentative)	Missouri

Conclusion: The Sector concluded that it was premature to recommend that the National Conference adopt the proposed changes as part of the GMM code. However, the Sector considered the matter of sufficient importance to recommend that it be submitted to the Central Weights and Measures Meeting and the Southern Weights and Measures Meeting for consideration as an item for development so it can appear on the Conference's Interim Agenda. The proposed changes are shown below:

Proposed Test Weight per Bushel Criteria for Section 5.56(a) of Handbook 44

A. Application

A.1. This code applies to grain moisture meters; that is, devices used to indicate directly the moisture content of cereal grain and oil seeds. The code consists of general requirements applicable to all moisture meters and specific requirements applicable only to certain types of moisture meters. Requirements cited for "test weight per bushel" indications or recorded representations are applicable to devices incorporating an automatic test weight per bushel measuring feature.

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S. Specifications

S.1. Design of Indicating, Recording, and Measuring Elements.

S.1.1. Digital Indications and Recording Elements.

- (a) Meters shall be equipped with a digital indicating element.
- (b) The minimum height for the digits used to display moisture content shall be 10 mm.
- (c) Meters shall be equipped with a communication interface that permits interfacing with a recording element and transmitting the date, grain type, grain moisture results, test weight per bushel results and calibration version identification.
- (d) A digital indicating element shall not display, and a recording element shall not record, any moisture content values or test weight per bushel values before the end of the measurement cycle.
- (e) Moisture content results shall be displayed and recorded as percent moisture content, wet basis. Test weight per bushel results shall be displayed and recorded as pounds per bushel. Subdivisions of ~~this~~ these units shall be in terms of decimal subdivisions (not fractions).
- (f) A meter shall not display or record any moisture content or test weight per bushel values when the moisture content or test weight per bushel of the grain sample is beyond the operating range of the device, unless the moisture and test weight representations includes a clear error indication (and recorded error message with the recorded representation).
- (g) On multi-constituent or multi-property meters (e.g., meters which also measure test weight per bushel or grain protein), provision shall be made for displaying and recording the constituent or property label (such as moist, protein, etc.) to make it clear which constituent or property is associated with each of the displayed and recorded values.

(Added 1995)

(Added 1993)(Amended 1994 and 1995)

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S.1.3. Operating Range. - A meter shall automatically and clearly indicate when the operating range of the meter has been exceeded. The operating range shall specify the following:

- (a) **Temperature Range of the Meter**
The temperature range over which the meter may be used and still comply with the applicable requirements shall be specified. The minimum temperature range shall be 10 °C to 30 °C. No moisture value may be displayed when the temperature range is exceeded. An appropriate error message shall be displayed when the temperature of the meter is outside its specified operating range.
- (b) **Temperature Range of each Grain or Seed**
The temperature range for each grain or seed for which the meter is to be used shall be specified. The minimum temperature range for each grain shall be 0 °C to 40 °C. No moisture value may be displayed when the temperature range is exceeded. An appropriate error message shall be displayed when the temperature of the grain sample exceeds the specified temperature range for the grain.

(c) **Moisture Range of the Grain or Seed**

The moisture range for each grain or seed for which the meter is to be used shall be specified. A moisture value may be displayed when the moisture range is exceeded if accompanied by a clear indication that the moisture range has been exceeded.

(d) **Maximum Allowable Meter/Grain Temperature Difference**

The maximum allowable difference in temperature between the meter and the sample for which an accurate moisture determination can be made shall be specified. The minimum temperature difference shall be 10 °C. No moisture value may be displayed when the maximum allowable temperature difference is exceeded. An appropriate error message shall be displayed when the difference in temperature between the meter and the sample exceeds the specified difference.

(Added 1993)(Amended 1995)

(e) **Test Weight per Bushel Range of the Grain or Seed**

The test weight per bushel range for each grain or seed for which the meter is to be used shall be specified. A test weight per bushel value may be displayed when the test weight per bushel range is exceeded if accompanied by a clear indication that the test weight per bushel range has been exceeded.

S.1.4. Value of Smallest Unit. - The display shall permit ~~constituent~~ moisture value determination to both 0.01 percent and 0.1 percent resolution. The 0.1 percent resolution is for commercial transactions; the 0.01 percent resolution is for type evaluation and calibration purposes only, not for commercial purposes. Test weight per bushel values shall be determined to the nearest 0.1 pound per bushel.

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S.2.4. Calibration Integrity

S.2.4.1. Calibration Version. - A meter must be capable of displaying either calibration constants, a unique calibration name, or a unique calibration version number for use in verifying that the latest version of the calibration is being used to make moisture content and test weight per bushel determinations.

(Added 1993)(Amended 1995)

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S.2.6. Determination of Quantity and Temperature. - The moisture meter system shall not require the operator to judge the precise volume or weight and temperature needed to make an accurate moisture determination. External grinding, weighing, and temperature measurement operations are not permitted. In addition, if the meter is capable of measuring test weight per bushel, determination of sample volume and weight for this measurement shall be fully automatic.

(Added 1994)(Amended 1995)

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S.4. Operating Instructions and Use Limitations. - The manufacturer shall furnish operating instructions for the device and accessories that include complete information concerning the accuracy, sensitivity, and use of accessory equipment necessary in obtaining a moisture content. Operating instructions shall include the following information:

- (a) name and address or trademark of the manufacturer;
- (b) the type or design of the device with which it is intended to be used;
- (c) date of issue;
- (d) the kind or classes of grain or seed for which the device is designed to measure moisture content and test weight per bushel;

- (e) the limitations of use, including but not confined to the moisture measurement range, test weight per bushel range, grain or seed temperature, maximum allowable temperature difference between grain sample and meter, kind or class of grain or seed, moisture meter temperature, voltage and frequency ranges, electromagnetic interferences, and necessary accessory equipment.
(Added 1984)

N. Notes

N.1. Testing Procedures.

N.1.1. Transfer Standards.¹ - Official grain samples shall be used as the official transfer standards with moisture content and test weight per bushel values assigned by the reference methods. The reference methods for moisture shall be the oven drying methods as specified by the USDA GIPSA. The test weight per bushel value assigned to a test weight transfer standard shall be the average of 10 test weight per bushel determinations using the quart kettle test weight per bushel apparatus as specified by the USDA GIPSA. Tolerances shall be applied to the average of at least three measurements on each official grain sample. Official grain samples shall be clean and naturally moist, but not tempered (i.e., water not added).

(Amended 1992)

N.1.2. Minimum Test.¹- A minimum test of a grain moisture meter shall consist of tests with samples of each grain or seed type (need not exceed three) for which the device is used, and for each grain or seed type shall include the following:

- (a) tests of moisture indications, with samples having at least two different moisture content values within the operating range of the device, and if applicable.
- (b) tests of test weight indications, with at least the lowest moisture samples used in (a) above.

(Amended 1986 and 1989)

[Editor's note: Paragraph N.1.2. has been completely re-organized. Some of the wording formerly in sub-paragraph (a) has been moved to the main paragraph. The wording formerly in sub-paragraph (b) has been moved to (a), and the wording now in (b) is new. Underlining indicates *only* additions to wording. No indications are given for relocated wording.]

¹ The U.S. Department of Agriculture, Grain Inspection, Packers and Stockyards Administration (GIPSA) uses a single brand and model of moisture meter for official inspection of moisture content in grains and other commodities. The moisture calibrations for the model are based on the official air-oven method and are developed and monitored on an established schedule using a broad range (with respect to geographical source, kind, class, moisture content, maturity, etc.) of grain samples at its central laboratory. GIPSA uses a hierarchical series of meter-to-meter intercomparisons to determine whether its field meters are operating within acceptable tolerances ($\pm 0.2\%$ with respect to standard meters). It has been shown that field meters checked by GIPSA procedures perform within H-44 maintenance tolerances (T.2.) when tested (N.1.) using official grain samples. Agencies lacking a sample capability representing the entire nation and traceable to the official laboratory reference method shall not use meter-to-meter field testing.

T. Tolerances²

T.1. To Underregistration and to Overregistration. - The tolerances hereinafter prescribed shall be applied to errors of underregistration and errors of overregistration.

T.2. Tolerance Values. - Maintenance and acceptance tolerances shall be as shown in Table T.2. Tolerances for moisture measurements are expressed as a fraction of the percent moisture content of the official grain sample, together with a minimum tolerance. Tolerances for test weight per bushel are (+) positive or (-) negative with respect to the value assigned to the official grain sample.

F.3. For Test Weight Per Bushel Indications or Recorded Representations. - The maintenance and acceptance tolerances on test weight per bushel indications or recorded representations shall be 0.193 kg/hL or 0.15 lb/bu. The test methods used shall be those specified by the USDA GIPSA.
(Amended 1992)

² These tolerances do not apply to tests in which grain moisture meters are the transfer standard.

Table T.2. Acceptance and Maintenance Tolerances for Grain Moisture Meters		
Moisture		
Type of Grain or Seed	Acceptance and Maintenance Tolerance	Minimum Tolerance
Corn, oats, rice, sorghum, sunflower	0.05 of the percent moisture content	0.8 percent in moisture content
All other cereal grains and oil seeds	0.04 of the percent moisture content	0.7 percent in moisture content
Test Weight per Bushel		
Type of Grain or Seed	Acceptance and Maintenance Tolerance	
<u>Corn, oats</u>	<u>0.8 pounds per bushel</u>	
<u>All wheat classes</u>	<u>0.5 pounds per bushel</u>	
<u>Soybeans, barley, oats, rice, sunflower, sorghum</u>	<u>0.7 pounds per bushel</u>	

UR. User Requirements

UR.1. Selection Requirements.

UR.1.1. Value of the Smallest Unit on Primary Indicating and Recording Elements. - The resolution of the moisture meter display shall be 0.1 percent moisture and 0.1 pounds per bushel test weight during commercial use.

UR.3.4. Printed Tickets.

- (a) Printed tickets shall be free from any previous indication of moisture content or type of grain or seed selected.
- (b) The customer shall be given a printed ticket showing the date, grain type, grain moisture results, test weight per bushel, and calibration version identification. The ticket shall be generated by the grain moisture meter system. (Amended 1993 and 1995)

UR.3.10. Posting of Meter Operating Range. - The operating range of the grain moisture meter shall be clearly and conspicuously posted in the place of business such that the information is readily visible from a reasonable customer position. The posted information shall include the following:

- (a) The temperature range over which the meter may be used and still comply with the applicable requirements. If the temperature range varies for different grains or seed, the range shall be specified for each.
- (b) The moisture range and test weight per bushel range for each grain or seed for which the meter is to be used.

- (c) The temperature range for each grain or seed for which the meter is to be used.
- (d) The maximum allowable difference in temperature that may exist between the meter and the sample for which an accurate moisture determination can be made. (Added 1988)

3. Proposed Change to Publication 14 - Use of Manufacturer Supplied Data in NTEP Calibration Updates

Background: At its March 1998 meeting, the Sector reviewed the NCWM Publication 14 requirements for evaluating moisture meter performance in the OCP (Phase II). Of particular concern was the restriction that only the latest 3 years of NTEP data would be used to make decisions regarding the need to make a calibration update. It was pointed out that dropping 1995 data could significantly reduce or eliminate data for samples at hand to obtain moisture levels. When it was suggested that manufacturers could re-submit the 1995 high moisture data as "manufacturer supplied data," manufacturers noted that under existing rules calibration status for any range can be no better than "pending approval" when based solely on manufacturer data. They pointed out that changing a range from "approved" to "pending approval" from one year to the next gives the appearance that the meters aren't as good this year as last.

Several opinions were voiced regarding a proposal to modify Publication 14 to allow the NTEP Laboratory to use more than three years of crop data to evaluate performance. The NTEP laboratory representative did not want the NTEP laboratory to have to decide which years to use or not use (unless it could be shown that any year's data were not valid). He also favored using only the three most recent years of data on the grounds that handling anything other than that was excessively cumbersome and would lead to increased possibility of errors in data handling alone. Some felt that using up to 5 years of data would increase the probability that resultant calibrations would be closer to the mean of year to year variations. Others believed that the recent acceleration in the rate of introduction of new varieties would give excessive weight to 4- or 5-year old data.

When finally put to a vote, the Sector decided by 14 to 0 to retain the existing Publication 14, Section IV requirement to use only the latest 3 years of data [where available].

Discussion: Several instances were noted this year (1998 crop year) where dropping the 1995 NTEP data affected the "approved" and/or "pending approval" status for a moisture interval. As expected, the moisture intervals most often affected were at the calibration extremes. In most cases, it was possible for the manufacturer to maintain a "pending approval" moisture range (the moisture range beyond which "out of moisture range" warnings are triggered) by resubmitting some or all of the 1995 crop data as manufacturer data. There was, however, quite a bit of confusion regarding the criteria for submitting and reviewing manufacturer data.

The review of NTEP calibration data was fairly straight-forward for the first 3 years of the program. After data collection was completed for the most recent crop year, a calibration report was developed using all available NTEP calibration data (none older than 3 years). Where applicable, a second report was developed that included all NTEP data plus any data previously submitted by the manufacturer. If there were no changes to a calibration, the initial reports were used to update moisture ranges on the certificate of conformance (CC). Where new calibrations were developed, manufacturers re-predicted moisture values, using both NTEP and manufacturer data, and a second set of calibrations reports was produced for updating CCs.

Consider the situation for the fifth year of the calibration program. It is still necessary to generate a report using the three most recent years of calibration data (1997, 1998, and 1999). A second report could be developed at the same time using, in addition, data previously submitted by the manufacturer (that would include NTEP data from 1995), but the NTEP laboratory would not know whether the manufacturer wants to use some or all of the 1996 data. One solution to this problem would be for manufacturers to submit a file with manufacturer data (including 1995 and 1996 "old" NTEP data) before November 1, 1999.

There is some confusion regarding tolerances to be applied when reviewing calibration reports that include manufacturer data. Calibration review criteria currently state that "Calibration status for any range can be no better than "pending approval" when based solely on manufacturer data." It is not clearly stated whether "approval" status can be assigned to moisture intervals containing both NTEP (most current three years) and manufacturer data. The NTEP laboratory currently does not assign a calibration status better than "pending approval" to any moisture interval where an instrument does not meet approval tolerances using only the most recent 3 years of NTEP data, and it upgrades calibration status to "pending approval" only

if the addition of manufacturer data brings instrument performance within “approval” tolerances. Although the NTEP Lab believes this was the Sector’s intention, it is not stated explicitly in Publication 14.

Conclusion: To address these concerns, the Sector unanimously approved the following changes to Part V, “Criteria for NTEP Moisture Calibration Review”, Case VII of the Checklist for Grain Moisture Meters in NCWM Publication 14.

- Case VII. Manufacturers may submit supplementary data to extend calibration “pending approval” ranges beyond available NTEP moisture ranges, ~~however, beginning with the 1997 calibration review and certificate update, only~~ All or a portion of the NTEP calibration data not included in the last three crop years may be submitted as manufacturer data. Only manufacturer data supplied in the standard data format, as defined in Appendix C, will be considered when determining calibration ranges and pending approval status.
- a. ~~Calibration status for any range can be no better than “pending approval” when based solely on manufacturer data. An initial calibration report is prepared using the most recent three years of NTEP calibration data. “Approval” and “pending approval” moisture ranges are determined using the criteria in Section IV (“Tolerances for Calibration Performance”) and Section V (“Special Cases Dealing with Inadequately Represented Moisture Intervals”). “Approval” ranges are determined solely on the basis of the most recent three years of NTEP calibration data and cannot be extended by including manufacturer data. “Pending approval” ranges can be extended through the use of manufacturer data.~~
 - b. ~~Manufacturer data supplied earlier in graphical or non-standard format must be re-submitted in standard data format. Failure to supply data in standard format may result in withdrawal of “pending” status if data collected by the NTEP lab is not sufficient to support use of the calibration for the range claimed. The process described in (a) is repeated using a second calibration report prepared using the most recent three years of NTEP calibration data plus manufacturer submitted data. Moisture intervals listed as “not approved” on the initial calibration report can be upgraded to “pending approval” if the bias to air oven is within the approval tolerance for that moisture interval. Confidence intervals are not applied to approval tolerances for use in determining pending approval ranges when manufacturer data is used.~~

4. Review of Evaluation Procedure Outlines (EPOs) and Test Procedures for the field evaluation of GMM devices

Background: At the March 1998 GMM/NIR Sector meetings a working group was established to develop EPOs and Field Evaluation Test Procedures for GMM and NIR devices to provide guidance to States on implementing NIST HB 44 as it applied to these devices. Templates were developed to assist the working group with their assignments in documenting the EPOs and field evaluation test procedures. The working group was divided into the 3 teams:

- Team 1 - EPO XXX for Grain Moisture Meters and NIST HB 44 Recommended Field Evaluation Test Procedures for Grain Moisture Meters, Whole Grain Sample Method.**
- Team 2 - EPO XXX for Near Infrared Grain Analyzers and Appendix A of EPO XXX, “NIST HB 44 Recommended Field Evaluation Test Procedures for Near Infrared Analyzers.”**
- Team 3 - Appendix B, Alternative Field Evaluation Test Procedures for Grain Moisture Meters, Meter to Meter Method.**

Discussion: Diane Lee, NIST-OWM, explained that EPOs are intended to be check lists which follow NIST HB 44. Test Procedures, on the other hand, should include specific procedures which must be followed to perform field evaluations (procedures for preparing samples may be included, as appropriate). Initial drafts of the EPOs and Test Procedures were reviewed by the Sector.

EPO Review and Comments

1. Several of the items in the check list are specifications which can be verified only during NTEP conformance testing.
2. The organization of items is confusing. It was suggested that items common to both Sec. 5.56.(a) and Sec.5.56.(b) of the code be placed in a section listing requirements applicable to all GMMs regardless of date

of manufacture. Also, some of the items listed from the General Code are covered in detail in the GMM Code. In these cases, the GMM Code takes precedence, and the General Code need not be repeated.

3. Reference is made to NTEP and non-NTEP meters, but the requirement states that the "NTEP requirements are applicable to any GMM manufactured or in service after January 1, 1998.
4. The Scope section should be expanded to include what is being evaluated when using the Test Procedures of Appendix A vs. Appendix B (e.g., Appendix B, Meter to Like Meter - hardware check).

Test Procedures Review and Comments

1. Editing is needed to achieve consistency between the procedures.
2. If alternative procedures are available, the Scope section of each procedure should describe the situation that would lead to the choice of that particular procedure.
3. Equipment lists should contain only those items necessary to perform the field test described by the procedure.
4. The sub-title of Appendix A, "Whole Grain Sample Method" is not sufficiently descriptive (Appendix B also uses "whole grain samples"). Alternate suggestions: "Oven Reference Method Using Grain Samples as Transfer Standards" or, simply, "Oven Reference Method."

Don Onwiler, Nebraska Department of Agriculture, Weights and Measures Division, suggested that the sentence, "This procedure is not the recommended test procedure of NIST HB 44" be removed from the draft Test Procedure for the Meter to Meter Method. He pointed out that a properly administered meter-to-like-meter testing program is a valid method of determining if devices are functioning properly. He reminded the Sector that an "adjusted" oven moisture method, also not the recommended NIST HB 44 procedure, was being used in other jurisdictions. [Definition of "Adjusted" oven moisture method: At the time the inspector obtains "fresh" oven moisture samples from the lab, a comparison is made between the oven moisture value of each sample and the moisture determined on a GMM which the inspector carries on inspections. Subsequently, before each field inspection, samples are again measured on the inspector's GMM. If this measurement (compared to the initial measurement made on the inspector's meter) reveals a moisture loss on any sample, the oven moisture of that sample is adjusted to reflect this loss. When the moisture loss exceeds a specified amount, samples are discarded.]

Don's comments sparked a discussion on the pros and cons of meter to meter testing, raising questions on the validity of meter-to-unlike-meter tests. One Sector member pointed out that although it was possible to locate samples which responded similarly on different models of dielectric based GMMs, it would be much more difficult to find samples which responded similarly on both dielectric and NIR devices. Sidney Colbrook, Illinois Department of Agriculture, recalled that prior to 1987, Illinois had used the meter to like meter method, but more than once found it difficult to explain to a grain elevator operator how two meters of different make could both pass their test but be different from each other by 1.5 % in moisture content. The Sector acknowledged that the situation today is different. There is now a national program to standardize moisture calibrations. The NTEP Phase II Ongoing Calibration Program uses a National Sample Set traceable to the official laboratory reference method. Meters of different make in the NTEP Phase II OCP are now closely aligned to this National Sample Set.

A meter to like meter program includes: 1) verifying that the correct calibration is installed, and 2) that a meter is functioning properly (a hardware test) on each grain type. With meter-to-like-meter testing, it may be possible to reduce the maintenance tolerance to be more discriminating because the tolerance will not have to include the added variance required to account for the inability to get exactly the same results on different meter types (even with carefully selected samples). Also, with meter-to-like-meter testing, oven moisture determinations do not have to be performed on field test samples. The inspector's meter becomes the transfer standard. The grain is a medium used to obtain a relevant comparison.

Considering Don Onwiler's request, the Sector suggested that the sentence, "This procedure is not the recommended test procedure of NIST HB 44" be replaced by wording to the effect: "This procedure is an alternative procedure applicable to meters of the same types as those in the NTEP Phase II Ongoing Calibration Maintenance Program where the accuracy of moisture calibrations have been verified with a National Sample Set traceable to the official air oven reference method."

Conclusion: Because of time limitations, and recognizing that major editing might be involved in a line-by-line review of each EPO and Test Procedure, the NIST representative was asked to edit the EPOs and Test Procedures to incorporate the Sector's suggestions. Electronic copies of the edited documents will be sent to Sector members for review and comment by November 15, 1999.

5. Update on the Status of the Interagency Agreement for Funding the Ongoing Calibration Program (OCP)

Background: At the Sector's March 1998 meeting, Diane Lee, representing NIST, and Rich Pierce, representing GIPSA, announced that NIST and GIPSA had agreed on a proposal for funding the Ongoing Calibration Program (OCP) on a more permanent basis beyond 1999. As proposed in March 1998, the initial agreement would cover a five-year period. After that, it would be renewed automatically, subject to annual review to determine if changes should be made. Under the proposed agreement, NIST and GIPSA would each contribute one-third of the cost of the program subject to an annual maximum of \$18,000 each. The remaining costs would be borne by manufacturers and would depend on the number of meter models in the NTEP "pool." Program costs would exclude the official meter (for which GIPSA would cover the costs associated with the official meter), but DICKEY-john would participate in the program contributing on the same basis as other participating manufacturers. Manufacturers were polled to determine if the proposed sharing of costs was acceptable. They were in general agreement that the one-third, one-third, one-third sharing of costs (even with an \$18,000 cap each for GIPSA and NIST) was reasonable, noting that the proposed fees for participating in the OCP were small in comparison to the costs they had incurred in obtaining NTEP approval and keeping up with changes in NTEP requirements.

Discussion: Diane Lee reported that the Interagency Agreement had been signed by both parties. The new OCP Fee Schedule will become effective at the beginning of the Federal Government's Fiscal Year 2000 (October 1, 1999) and will run through FY2004. The cost to manufacturers will depend on the number of meter types in the NTEP Pool (see following table).

NTEP Ongoing Calibration Program Participation Fee Schedule for FY2000 - FY2004	
Number of meters in NTEP pool (excluding GIPSA's Official Meter)	Cost to Manufacturer per Meter Type
1	\$2,250
2	\$3,000
3	\$3,375
4	\$3,600
5	\$5,250
6 (number currently in pool)	\$6,429
7	\$7,313
8	\$8,000
9	\$8,550

6. Update on Type Evaluation and Phase II Testing

Rich Pierce of the Grain Inspection, Processors and Stockyards Administration (GIPSA, formerly FGIS), the NTEP Participating Laboratory for Grain Moisture Meters, reported that the NTEP laboratory had three active applications: 1) testing has been completed and a report is being prepared on an application to add a like model to an existing certificate; 2) testing has also been completed to extend the temperature ranges on an existing certificate; and 3) an application was received in June 1999 for a new meter model, but because of Phase II OCP priorities, no testing has been performed yet on that model. He also presented summary data for the crop years 1996 - 1998 showing how well meters in the NTEP Phase II Ongoing Calibration Program have performed as a group. Meters are well aligned with each other and also well aligned with the official air oven. An abbreviated summary for five of the 15 NTEP grains is shown in the following table.

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Moisture Interval % moisture	Average Difference between All Meters and Air Oven All Samples from National Calibration Set for 1996, 1997, and 1998 Crop Years (% moisture content)				
	CORN	SOYBEAN	SOFT RED WINTER WHEAT	SORGHUM	SIX- ROWED BARLEY
4 - 6	-----	-----	-----	-----	-----
6 - 8	-0.14	0.23	-----	-----	0.15
8 - 10	0.00	0.10	0.00	-0.27	0.16
10 - 12	0.03	0.01	0.06	0.16	0.09
12 - 14	-0.04	0.00	0.04	0.09	0.03
14 - 16	0.04	0.00	0.01	-0.04	-0.05
16 - 18	0.10	-0.11	-0.10	-0.11	-0.48
18 - 20	0.15	-0.05	0.09	-0.12	-0.19
20 - 22	-0.03	-0.24	-0.12	-0.26	-0.61
22 - 24	0.08	-1.29	-----	-0.14	-----
24 - 26	0.02	-----	-----	0.00	-----
26 - 28	0.13	-----	-----	-0.09	-----
over all moistures	0.04	0.00	0.02	0.01	0.03

7. Status of NTEP Meters in the Field - Review of Data from State Inspections

Background: At previous Sector meetings, the issues of: 1) the States becoming more involved with NTEP, and 2) obtaining objective evidence that NTEP and the OCP are working, have been discussed. To address these issues, several States provided NIST with data obtained in the process of performing field inspections on NTEP Grain Moisture Meters (both dielectric and near infrared types). Diane Lee reported on results received from Arkansas, Maryland, Illinois, and North Carolina. The Sector was encouraged by the results, which showed significant improvement compared to baseline data collected several years ago.

Moisture Interval % moisture	Average Difference between NTEP Meters and Air Oven All Data from Field Inspections in AR, MD, IL, & NC (% moisture content / SDD)									
	n	CORN	n	SOYBEAN	n	SOFT RED WINTER WHEAT	n	SORGHUM	n	BARLEY
10 - 12	0	no data	8	-0.20 / 0.22	0	no data	0	no data	0	no data
12 - 14	2	0.59 / 0.01	40	-0.03 / 0.19	36	-0.31 / 0.33	0	no data	0	no data
14 - 16	50	0.07 / 0.34	49	-0.02 / 0.21	31	-0.21 / 0.24	4	-0.26 / 0.09	12	0.20 / 0.15
16 - 18	52	-0.09 / 0.27	12	-0.35 / 0.29	40	0.05 / 0.27	0	no data	0	no data
18 - 20	51	-0.16 / 0.33	0	no data	0	no data	0	no data	0	no data

n = number of meters

8. Process for Making Mid-year Changes to NTEP GMM/NIR Certificates of Conformance (CCs)

Background: In February of 1999, the USDA Grain Inspection, Packers and Stockyards Administration (GIPSA) released revised moisture calibrations for corn, high moisture corn, and soybeans for the official grain moisture meter, stipulating that the new calibrations were to be used for all official moisture determinations on and after February 22, 1999. The changes were meant to correct moisture measurement differences observed in the field under certain testing conditions, and to improve moisture measurement accuracy for corn and soybeans at extreme temperatures. GIPSA's action necessitated a mid-year change to the NTEP CC for DICKEY-john's GAC 2100, the official grain moisture meter. NIST, in conjunction with the NTEP laboratory, developed a process for handling mid-year CC changes. Diane Lee and Rich Pierce explained the process emphasizing that regardless of when a CC is re-issued for a mid-year change, all CCs expire on June 30. The costs assessable to manufacturers for re-issuing CC, may make it advisable to plan for some types of change (such as adding a new model of like type or changing a description or feature) to coincide with the normal annual re-issue date. A copy of the revised flowchart of the process is attached.

9. Fees for NTEP Applications and Evaluation of Grain Moisture Meters

Background: For the benefit of present and potential applicants for NTEP evaluation of Grain Moisture Meters, Diane Lee, representing NIST, and Rich Pierce, representing the NTEP participating laboratory, reviewed the process for submitting an application for device type evaluation and enumerated the fees relating to various steps in Phase I (initial device evaluation) and Phase II (ongoing calibration program). The fee structure is summarized in the following tables.

On a related matter, Dr. Pierce, representing the NTEP laboratory, reported that several manufacturers were not observing the deadlines for submission of re-predicted data and calibration changes. This causes a delay in updating CCs. It was suggested that sending reminders to manufacturers and publishing a table of due dates on the web site might alleviate the problem. The possibility of assessing "late fees" was also mentioned, but no action was taken.

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Fees Associated with the National Type Evaluation Program (NTEP) for Grain Moisture Meters				
Type of Fee	Amount	Fee Is Applied	Condition	Billed by
Application	\$690	per application	Initial evaluation (Phase I) Phase II (OCP) only if changes have been made to the device. <i>If no changes have been made, there is no fee for phase II applications.</i>	NIST-OWM
CC drafting & processing by NIST	\$500	per CC	When CC is drafted by NIST	NIST-OWM
CC processing only by NIST	\$150	per CC	When CC is drafted by the NTEP Laboratory or manufacturer	NIST-OWM
CC Drafting by NTEP Lab	see note 1	per hour	When CC is drafted by the NTEP Laboratory or manufacturer	NTEP Lab see note 2
Phase I Testing	see note 1	per hour	Testing performed by NTEP Laboratory	NTEP Lab see note 2
Phase II Testing	see note 1	per hour	Testing performed by NTEP Laboratory	NTEP Lab see note 2
Phase II Participation Fee (Starting FY 2000)	see GMM agenda item 5	annually	When participating in the Phase II OCP (participation is required to maintain an Active CC)	NTEP Lab see note 2
CC Maintenance Fee	\$100	annually (December)	Cost of maintaining CCs	NCWM, Inc.
<p>Note 1: See grain moisture meter NTEP Laboratory fees. Note 2: For grain moisture meters, NTEP Laboratory fees are billed though the National Finance Center. Note 3: All fees are subject to change.</p>				

National Type Evaluation Program - Grain Moisture Meters Typical NTEP Laboratory Fees for Phase I, Initial Type Evaluation			
Activity/Test	Estimated Labor (hours) see notes 1 & 2	Air Oven Tests see note 3	Fees see note 1
Publication 14 Checklist	8	0	\$384.00
Prepare Test Sample Sets	6	0	\$288.00
Power Supply	1.75	7	\$126.00
Storage Temperature	1.75	5	\$114.00
Leveling	1.75	0	\$84.00
Warm-up Time	1.25	3	\$78.00
Humidity	1.75	3	\$102.00
Instrument Stability	2	12	\$168.00
Instrument Temperature Sensitivity	2.25	18	\$216.00
Sample Temperature Sensitivity	25.5	0	\$1,224.00
Accuracy, Precision, and Reproducibility	20.25	180	\$2,052.00
Bias Check for 12 NTEP Grains	27	288	\$3,024.00
Prepare NTEP Test Report	8	0	\$384.00
Draft Certificate of Conformance	6	0	\$288.00
Total Estimated Cost			\$8,532.00
Note 1: If device fails any test and requires re-testing, there will be additional costs to the manufacturer. Note 2: Current labor rate is \$48.00/hour. Note 3: Current fee for air oven tests: \$6.00/test. Note 4: All rates and fees are subject to change.			

10. Update on the Structure of NCWM and the Organization of NTEP

Background: A decision was made by NIST management that the Office of Weights and Measures would not hire an employee to continue meeting planning activities for the Conference after its meeting planner retired. NIST contracted with the meeting planner to continue providing these services for two years to give the NCWM time to make other arrangements. The NCWM contracted with a management company to perform these administrative functions of the Conference.

The NCWM was incorporated in August 1997 to protect it from liability in various NCWM activities. NCWM, Inc. is now assuming many of the NCWM business and administrative functions previously performed by NIST. For the most part, the impact of these changes will be transparent with respect to the operation of the technical sessions of the Conference. The NCWM's current Constitution and Bylaws are combined into one publication called the "Bylaws of the National Conference on Weights and Measures, Inc." Under the Bylaws, the Executive Committee has become the "Board of Directors" (BOD) of the corporation and the NTEP Board of Governors has become the "NTEP Committee."

Diane Lee reported that the NCWM, Inc. BOD recently decided to assume responsibility for management and administration of NTEP. Some of the transition activities and recent meetings were reviewed with the Sector. Several Sector members whose companies were recognized under ISO 9001 expressed concern about the effect of the move of their CCs from NIST to NCWM, Inc. on their ISO 9001 status.

(Editorial Note: In a meeting on October 28, 1999, at NCWM Headquarter's, NIST and the NCWM BOD tentatively agreed on a plan of actions and strategies to clarify and redefine respective roles in support of uniformity of the U.S. weights and measures system. NIST's redefined roles will foster stronger technical support and assistance to NCWM activities and provide a smooth transition of the management of NTEP to NCWM, Inc.)

Current information on the NTEP Transition is located on the NIST-OWM web site at <http://www.nist.gov/nteptransition>. As the transition progresses, updates will be provided.

11. Report on the 1998 NCWM Annual Meeting and the 1999 NCWM Interim and Annual Meetings

Background: Diane Lee, NIST/OWM, reported on items of interest to the Sector that were acted on at NCWM Annual and Interim Meetings which have taken place since the Sector last met in March of 1998.

The 1998 National Conference on Weights and Measures (NCWM) Annual Meeting was held July 12-16, in Portland, Oregon. The Specifications and Tolerances (S&T) Committee GMM items listed below were adopted by the Conference as proposed in the *Program and Committee Reports for the 83rd Annual Meeting*, NCWM Publication 16, dated April 1998. Additional discussion of these issues can be found in that publication. The changes have been incorporated in the 1999 edition of Handbook 44, issued November 1998.

- **S&T Item 356-1: Table S.2.5 Categories of Device and Methods of Sealing; Category 3**

Background: During its 1997 review of proposed Sealing Requirement changes to Publication 14, the Sector noted that there was no requirement for a Category 3 device to indicate that it is in the configuration mode during remote access to sealable parameters. The Sector agreed that the requirements for a Category 3 device should be no less stringent than for Category 2 devices. When in the remote configuration mode, Category 2 devices must clearly indicate that they are in the remote mode and shall not be capable of providing measurement operations. The Sector recommended that similar requirements be added to Table S.2.5. of Grain Moisture Meter Code 5.56(a) for Category 3 devices.

- **S&T Item 356-2 Grain Types Considered for Type Evaluation and Calibration and Minimum Acceptable Abbreviations**

Background: GIPSA has combined the wheat classes "Eastern White Wheat" and "Western White Wheat" into a single new class designated "Soft White Wheat." At its September 1997 meeting the Sector unanimously recommended changes to Table S.1.2. of Grain Moisture Meter Code 5.56(a) to reflect this change in wheat classes.

- **S&T Item 356-3 Amend S.2.4.3 Calibration Transfer**

Background: At its March 1997 meeting, the Sector proposed revisions to paragraph S.2.4.3. of Grain Moisture Meter Code 5.56(a) to make it clear that calibrations must be transferable between instruments of like type **without** requiring user slope or bias adjustments. The proposed revisions were also intended to clarify the difference between standardization adjustments (or parameters) and grain calibration coefficients. The Sector recommended that the changes be nonretroactive and effective as of January 1, 1999.

The Executive Committee GMM agenda item listed below was changed from voting to informational because of the extent of changes from the March 1998 Sector meeting and because of due process concerns. [Note: This item was carried over to the Agenda for the 1999 Interim Meeting as Board of Directors (BOD) Item 102-9. Because of the incorporation of the NCWM and changes in the organization of NTEP, this item became **NTEP Committee Item 501-9** at the 1999 Annual Meeting.]

- **Executive Committee Item 102 –10 Additions and Revisions to the Definitions for Grain Moisture Meters in NCWM Publication 14**

Background: This item addressed the unique treatment of Certificates of Conformance (CCs) for grain moisture meters (GMMs). Modifications to the Administrative Procedures of Publication 14 were proposed to specify the requirements for maintaining an active CC for a GMM and to define what happens when a CC is allowed to expire.

The 1999 NCWM Interim Meeting was held January 31 - February 4, 1999 in Albuquerque, New Mexico. The NTEP Committee, accepted Item 102-9 (renamed NTEP Committee Item 501-9) as a voting item for the 1999 Annual Meeting as proposed in the *Interim Meeting Agenda*, NCWM Publication 15. Item 102-9 was a carry over from Item 102-10 from the 1998 Conference.

The NCWM Annual Meeting was held July 25-29, 1999 in Burlington, Vermont. The following item was approved by the Conference. [Note: The item number shown below corresponds to the item number in *Committee Reports for the 84th Annual Meeting*, NCWM Publication 16. It was Item 102-9 at the 1999 Interim Meeting.]

- **NTEP Committee Item 501-9 Additions and Revisions to the Definitions for Grain moisture Meters in NCWM Publication 14.**

Background: This is a carry over of Item 102-10 from the 1998 Annual Meeting (see above.) The final recommendation approved by the Conference is shown below (additions are underlined.)

N. Status of Certificate of Conformance; Maintenance Fee

Except for Grain Moisture Meters. a Certificate of Conformance does not have an expiration date; however, the device manufacturer must update the design of a device to meet new or modified requirements adopted by the NCWM. The NCWM charges a maintenance fee for Active Certificates to support the technical and administrative activities of the NCWM for NTEP.

1. Declaration of Status by Certificate Holder

The Certificate holder, usually the manufacturer or remanufacturer, declares intent to continue to manufacture or remanufacture the device by paying to the NCWM, an annual maintenance fee for the Certificate. If the maintenance fee is not paid (or if other outstanding bills have not been paid or arranged to be paid for the issuance of a Certificate), the Certificate is "inactive."

In addition to the above, Grain Moisture Meter manufacturers must pay an annual participation fee for the NTEP laboratory On-going Calibration Program, OCP (Phase II) in order to maintain their certificate in an Active status.

2. Active Status

Devices are being manufactured or remanufactured for commercial applications under an NTEP Certificate of Conformance. This means that the Certificate is in force with a hard copy of the Certificate issued and distributed.

In addition to the above, a Grain Moisture Meter must remain in the OCP (Phase II), and the manufacturer must continue to pay the required maintenance fee. Grain Moisture Meter Certificates may also be assigned an Active status if: (1) the original manufacturer no longer manufactures or remanufactures the device but continues to participate in the OCP (phase II); or (2) a third party elects to maintain the calibrations after a Certificate expires for a device in which the original manufacturer has stopped manufacturing or re-manufacturing the device. (See Note.)

3. Effective Status

Equivalent to ACTIVE status, but a hard copy of the Certificate of Conformance has not yet been issued and distributed. Therefore, a hard copy of the Certificate is not yet included in Publication 5.

4. Inactive Status

An Inactive Certificate of Conformance is a Certificate which was previously Active, but the devices are no longer being manufactured or remanufactured for commercial applications. However, devices already manufactured, installed, or in inventory, but not yet sold, may be used, sold, repaired, and resold, under an Inactive Certificate of Conformance.

5. Withdrawn Status

The Certificate of Conformance remains valid unless withdrawn as the result of a specific determination by NTEP.

A Certificate of Conformance may be withdrawn

- a. for deficiencies in the type, or
- b. when production devices do not meet type.

Additionally, a Grain Moisture Meter Certificate may be withdrawn when for two consecutive years problems or deficiencies occurring in the OCP (Phase II) have prevented the issuance of valid calibration constants for all calibrations previously classified as "Approved" or "Pending." After a Certificate is withdrawn, the manufacturer must submit a new application and application fee per device model, and the device must be reevaluated in Phase I before it is entered in the OCP (Phase II). Any meters manufactured after a Certificate is withdrawn, cannot be sold or placed into service for commercial use. Meters in service will be subject to individual State enforcement activities.

6. Expired Status

An Expired status is assigned to a Grain Moisture Meter Certificate of Conformance when a manufacturer elects to discontinue participation in the On-Going Calibration Program and the calibrations listed on the CC were performing acceptably at the time the manufacturer stopped participating in the OCP (Phase II).

Any meters manufactured after a Certificate has expired cannot be sold or placed into service for commercial use. Meters in service may be used, but actions taken would depend on individual State enforcement activities. (See Note.)

Note: A third party would be allowed to assume the responsibility for maintaining calibrations for a device which has expired without re-entering Phase I if the party participates in the OCP (Phase II) testing the year the original certificate expires, and providing the original manufacturer certifies that the device will no longer be manufactured or remanufactured. In this case, the third party must: (1) submit evidence of authorization from the original manufacturer for use of previous test results and also certification from the original manufacturer that the device will no longer be manufactured or remanufactured; (2) submit a new application; (3) pay the participation fee for the device; (4) demonstrate the ability to re-predict moisture data and modify calibrations as required; (5) pay the maintenance fee for the new certificate; and (6) permanently mark the device with the company name. After successful completion in the OCP an Active Certificate with a new number would be issued for the device submitted by the third party.

12. Time and Place for Next Meeting

The next meeting is tentatively planned for the week of August 21, 2000, in the Kansas City, MO, area. Meetings will be held in the conference facility at the GIPSA Tech Center. An optional NIR training session for W&M Field Inspectors and other interested parties is being planned to precede the Sector meetings. A tentative schedule is shown below.

Tuesday, August 22	1:00 pm - 5:00 pm	Optional NIR training session
Wednesday, August 23	8:00 am - 12:00 noon	Optional NIR training session
Wednesday, August 23	1:00 pm - 5:00 pm	NIR Grain Analyzer Sector Meeting
Thursday, August 24	8:00 am - 5:00 pm	GMM Sector Meeting
Friday, August 25	8:00 am - 12:00 noon	GMM Sector Meeting

The above schedule is subject to change pending confirmation of funding availability and determination of final agenda issues. Please try to keep that week open until firm dates have been set.

**National Type Evaluation Technical Committee
Near Infrared (NIR) Grain Analyzer Sector
September 10, 1999, St. Louis, MO
Meeting Summary**

Agenda Items

- *1. Election of Sector Chairperson
- *2. Update on the Structure of NCWM and the Organization of NTEP
3. Report on the 1999 NCWM Interim and Annual Meetings
- *4. Time and Place for Next Meeting
5. NIR Tentative Code Study and NCWM Specifications and Tolerance Committee Item 357-2, Indication of Additional Constituent Values
6. Review of Evaluation Procedure Outlines (EPOs) and Test Procedures for the Field Evaluation of Near Infrared Grain Analyzers

Note: Because of common interest, items marked with an asterisk (*) will be considered in joint session of the NIR Grain Analyzer and the Grain Moisture Meter Sectors.

1. Election of Sector Chairperson

Richard (Will) Wotthlie, MD Weights and Measures, was re-elected to the post of Chairperson for both the Grain Moisture Meter Sector and the Near Infrared Grain Analyzer Sector by unanimous vote of those present. Under the rules adopted by the Sector in March of 1996, he will serve a 3-year term or until a successor is elected.

2. Update on the Structure of NCWM and the Organization of NTEP

Background: A decision was made by NIST management that the Office of Weights and Measures would not hire an employee to continue meeting planning activities for the Conference after its meeting planner retired. NIST contracted with the meeting planner to continue providing these services for 2 years to give the NCWM time to make other arrangements. The NCWM contracted with a management company to perform these administrative functions of the Conference.

The NCWM was incorporated in August 1997 to protect it from liability in various NCWM activities. NCWM, Inc. is now assuming many of the NCWM business and administrative functions previously performed by NIST. For the most part, the impact of these changes will be transparent with respect to the operation of the technical sessions of the Conference. The NCWM's current Constitution and Bylaws are combined into one publication called the "Bylaws of the National Conference on Weights and Measures, Inc." Under the Bylaws, the Executive Committee has become the "Board of Directors" (BOD) of the corporation and the NTEP Board of Governors has become the "NTEP Committee."

Diane Lee reported that the NCWM, Inc. BOD recently decided to assume responsibility for management and administration of NTEP. Some of the transition activities and recent meetings were reviewed with the Sector. Several Sector members whose companies were recognized under ISO 9001 expressed concern about what effect the move of their CCs from NIST to NCWM, Inc. might have upon their ISO 9001 status.

(Editorial Note: In a meeting on October 28, 1999, at NCWM Headquarter's, NIST and the NCWM BOD tentatively agreed on a plan of actions and strategies that will clarify and redefine respective roles in support of uniformity of the U.S. weights and measures system. The NIST's roles will foster stronger technical support and assistance to NCWM activities and provide a smooth transition of the management of NTEP to NCWM, Inc.)

Current information on the NTEP Transition is located on the NIST-OWM website at www.nist.gov/ntep. As the transition progresses, updates will be provided.

Discussion: In connection with a discussion relating to what effect the NTEP transition might have on NTEP participating laboratories, David Funk, GIPSA, announced that GIPSA was now ready to move forward to obtain recognition as the NTEP

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laboratory for NIR Grain Analyzers. (The approval of an NTEP laboratory for NIR Grain Analyzers has been on hold for several years.) He was urged to submit the required information as soon as possible (preferably by the end of 1999).

3. Report on the 1999 NCWM Interim and Annual Meetings

The 1999 NCWM Interim Meeting was held January 31 - February 4, 1999, in Albuquerque, NM, and the 1999 NCWM Annual Meeting was held July 25-29 in Burlington, VT. Diane Lee, NIST/OWM, reported on items of interest to the Sector.

- **S&T Item 357-1 Near-Infrared Grain Analyzers - Tentative Code; Removal of Retroactive Dates.**

This item was accepted by the conference. In the next issue of NIST Handbook 44, retroactive dates will be removed and the non-retroactive date of January 1, 2000, will be changed to January 1, 2002.

- **S&T Item 357-2 Near-Infrared Grain Analyzers - Tentative Code; Indication of Additional Constituent Values.**

Based on industry comments that the requirements may be premature, the Specifications and Tolerances Committee assigned this issue informational status. See Agenda Item 5, this Summary, for additional discussion of this issue.

4. Time and Place for Next Meeting

The next meeting is tentatively planned for the week of August 21, 2000, in the Kansas City, MO, area. Meetings will be held in the conference facility at the GIPSA Technical Center. An optional NIR training session for W&M Field Inspectors and other interested parties is being planned to precede the Sector meetings. A tentative schedule is shown below.

Tuesday, August 22	1:00 pm - 5:00 pm	Optional NIR training session
Wednesday, August 23	8:00 am - 12:00 noon	Optional NIR training session
Wednesday, August 23	1:00 pm - 5:00 pm	NIR Grain Analyzer Sector Meeting
Thursday, August 24	8:00 am - 5:00 pm	GMM Sector Meeting
Friday, August 25	8:00 am - 12:00 noon	GMM Sector Meeting

The above schedule is subject to change pending confirmation of funding availability and determination of final agenda. issues. Please try to keep that week open until firm dates have been set.

5. NIR Tentative Code Study and NCWM Specifications and Tolerance Committee Item 357-2, Indication of Additional Constituent Values

Background: At the Sector's March 1998 meeting, Weights and Measurers representatives reported that they were seeing an increasing number of NIR Analyzers in their jurisdictions. It was also reported that much of the commercial usage for the NIR devices was for corn and soybeans. In recognition of this fact, the Sector proposed modifications to the NIR Grain Analyzer Tentative Code (See Item 357-2, Committee Reports for the 84th Annual Meeting, NCWM Publication 16 for details of the modifications) to include tests for corn (protein, oil, and starch), barley (protein), and soybeans (protein, oil). The Sector also determined that with an increasing number of instruments in the field and an increasing need for requirements to regulate NIR Analyzers, additional information from a study of these devices in accordance with the NIST Handbook 44 NIR Tentative Code would provide useful information needed to make recommendations to upgrade the tentative code to a permanent code.

Discussion: Several states participated in a study of the Tentative Code and the proposed modifications. Maryland and Georgia collected samples. Arkansas, Iowa, Illinois, Missouri, Nebraska, and North Carolina collected samples and tested NIR devices. At the time of the Sector's September 1999 meeting, results were received from five states: Arkansas, Iowa, Illinois, Nebraska, and North Carolina. Diane Lee, NIST Office of Weights and Measures, presented the results of the study.

In the study, NIR instruments were tested using soft red winter wheat (protein), soybeans (protein and oil) and corn (oil). Soybean samples used in the study were from Georgia, Missouri, and Maryland, the soft red winter wheat samples were from North Carolina, and the corn samples were from Illinois. Reference constituent values were determined by USDA/GIPSA. The samples used in the study met the requirements of the Tentative Code. Tests for protein and starch in corn were to be included in the study, but the samples tested did not meet the requirements of the Tentative Code and, therefore, were not included in the study. The results of Nebraska's July 1996 survey of 29 devices using three samples of hard red winter wheat

(as opposed to five samples specified in the Tentative Code) were also included in the report. The overall results are summarized in the following table.

Preliminary Results of the NIST Handbook 44 Near Infrared Grain Analyzer Tentative Code Study (including study of proposed modifications) as of September 1999				
	Corn	Soybeans		Wheat
	oil @ 0% m	oil @ 13% m	protein @ 13% m	protein @ 12% m
Number of devices tested	57	31	32	48
Number of devices failing one or more tests	27	3	6	21
device rejection rate	47.4%	9.7%	18.8%	43.8%
% failing test criteria 1	21.1%	9.7%	18.8%	18.8%
% failing test criteria 2	8.8%	0.0%	12.5%	35.4%
% failing test criteria 3	19.3%	0.0%	6.3%	22.9%
criterion 1: individual sample test; criterion 2: average of 5 samples; and criteria 3: range for 5 retests. m = moisture (wet basis)				

The final NIR study report will be completed and distributed after additional information which was requested from the participants is included in the report.

In comments submitted by Grain Industry representatives on the Sector's proposed addition of corn, soybeans, and barley to the Tentative Code, the industry expressed the belief that it was premature to establish a specific moisture basis in the NIR code for products other than the 12% basis for wheat because the marketplace is currently unsettled on an appropriate moisture basis for many of the commodities, such as high oil corn. It was their belief that establishing specific moisture bases for these products could create confusion and potential market disruption if W&M officials enforce the proposed moisture bases for corn and soybeans when commercial contracts call for different bases. The Grain Industry prefers flexibility in setting a moisture basis for a specific product because of the wide differences in moisture bases used when buying or selling grains with unique characteristics.

Reviewing the field survey data, the Sector noted that a significant number of rejects may have been due to a misunderstanding on the part of some device operators as to what moisture basis the device had been calibrated for, or confusion about how to handle the conversion between the device's reading and a different moisture basis.

When one Sector member questioned the tolerance applied to the range of five retests for oil in corn, believing it might be too tight, another member suggested that the instruments exhibiting excessive range may, in fact, have sample feeding problems.

In the ensuing discussion, it became apparent that the practical problems associated with maintaining uniformity between devices in the field seemed to mandate that inspections, tolerances, and regulatory samples used in inspection be based on specified fixed moisture bases. On the other hand, the Sector recognized that the Grain Industry requires the flexibility to use different moisture bases. The Federal System addresses this problem by reporting constituent concentrations at both a "standard" moisture and at the moisture basis requested by the customer (if other than "standard"). For example, if a dry basis protein is requested for wheat which has a "standard" moisture basis of 12%, the report contains a statement to the effect: 14% protein at 12% moisture; at 0% moisture the protein is 15.9%.

Present day commercial devices handle the conversion to different moisture bases in a variety of ways. Some of the devices encountered on the survey had been calibrated to read direct at dry basis. Conversion to other moisture bases was accomplished by manually multiplying the device's dry basis reading by 100 minus the new basis divided by 100 (e.g.,

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multiply device reading by 0.85 to find constituent value at 15% moisture basis). Some measured on an "as is" moisture basis and could convert to any moisture basis keyed in by the operator, but also required that the device be calibrated to measure moisture of the sample. Others were calibrated to read direct at a fixed non-zero moisture basis. Assessing the suitability of many NIR instruments for operating in a regulatory environment, the Sector recognized the following problems:

- constituent results were frequently displayed/recorded with no clear indication of moisture basis
- there was no way for field inspectors to determine the moisture basis on which calibration was derived

The issue of special calibrations for genetically modified organisms (GMOs), such as herbicide resistant soybeans and high oil corn, was raised. A case was cited in which a calibration was tailor-made to fit a company's product. Contracts stipulated the use of the tailor-made calibration in determining product acceptability. A measurement system closely tied to one product raises a barrier to entry for other products. Competitive products of equal inherent value were less likely to pass because they didn't "fit" the special calibration. It was suggested that it might be appropriate for NIST/OWM to hold an informational meeting at which representatives of the special genetics industry, the grain processing industry, the grain trade, and producer organizations could be made aware of what is meant by national uniformity and how the desire to provide equity in the marketplace will affect the use of NIR devices in a regulated environment. Noting that although GIPSA is not required to provide inspection for non-grade determining factors, David Funk reported that GIPSA did have an interest in providing measurements on value added commodities, especially those which might lead to expanded markets for U.S. grain. In this regard, he said that GIPSA would meet individually with some of the bio-technology companies that have developed GMOs to discuss how GIPSA and these companies might work together.

Several Sector members expressed the belief that establishment of a nationally recognized reference laboratory was a key requirement for a workable enforcement program. Even if multiple laboratories were recognized, it would be important to establish a single referee laboratory with the authority to settle disputes.

Conclusion: Until issues discovered during the NIR Tentative Code study can be resolved, the Sector agreed that the existing Code should remain tentative as modified by the conference at the 1999 Annual Meeting (See Summary Item 3, Conference Item 357-1, **Removal of Retroactive Dates**), and that Conference Item 357-2, **Indication of Additional Constituent Values**, should be made an item for development. The Sector's Technical Advisor and the NTEP laboratory representative were asked to develop a proposal for addressing the moisture basis issue for consideration by the Sector at or before its August 2000 meeting, the goal being to forward a recommendation on 357-2 to the S&T Committee for consideration at their January 2001 meeting.

6. Review of EPOs and Test Procedures for the field evaluation of Near Infrared Grain Analyzers

Background: At the March 1998 GMM/NIR Sector meetings a working group was established to develop Examination Procedure Outlines (EPOs) and Field Evaluation Test Procedures for GMM and NIR devices to provide guidance to States on implementing NIST HB 44 as it applied to these devices. Templates were developed to assist the working group with their assignments in documenting the EPOs and field evaluation test procedures. The working group was divided into the 3 teams:

- Team 1 - EPO XXX for Grain Moisture Meters and NIST HB 44 Recommended Field Evaluation Test Procedures for Grain Moisture Meters, Whole Grain Sample Method.**
- Team 2 - EPO XXX for Near Infrared Grain Analyzers and Appendix A of EPO XXX, "NIST HB 44 Recommended Field Evaluation Test Procedures for Near Infrared Analyzers."**
- Team 3 - Appendix B, Alternative Field Evaluation Test Procedures for Grain Moisture Meters, Meter to Meter Method.**

Discussion: Diane Lee, NIST-OWM, explained that EPOs are intended to be check lists which follow NIST HB 44 requirements. Test Procedures, on the other hand, should include specific procedures which must be followed to perform field evaluations (procedures for preparing samples may be included, as appropriate). Commenting on the Draft EPO for NIR Grain Analyzers, the Sector noted:

1. Several of the items in the check list are specifications which can be verified only during NTEP conformance testing.

2. The retroactive dates have been removed from the Tentative Code. It would be helpful if the EPO provided some suggestions on which portions of the code should be applied to pre-NTEP devices.

The Test Procedure was not available for review, but the Sector noted:

1. The test protocol developed for the NIR Tentative Code Study (see Item 6, this Summary) contains the essential information needed for the Test Procedure.
2. When the Test Procedure is developed, it should be edited to be consistent with the Test Procedures for GMMs.

Conclusion: Because of time limitations, and recognizing that major editing might be involved in a line-by-line review of each EPO and Test Procedure, the NIST representative was asked to edit the EPO and Test Procedure to incorporate the Sector's suggestions. Electronic copies of the edited documents will be sent to Sector members for review and comment by November 15, 1999.

Attendance List National Type Evaluation Technical Committee Grain Moisture Meters and NIR Grain Analyzers Sectors September 8 - 10, 1999 St. Louis, MO				
Name & Affiliation	Internet E-Mail Address	September		
		8	9	10
Jack Barber, JB Associates	jbarber@cityscape.net	X	X	X
Connie Brown, DICKEY-john Corp.	cbrown@dickey-john.com	X	X	X
Randy Burns, Arkansas Bureau of Standards	BurnsR@aspb.state.ar.us	X	X	X
Sidney Colbrook, Illinois Dept. of Agriculture	scolbrook@agr.state.il.us	X	X	X
Bob Davis, Illinois Department of Agriculture	bdavis@agr.state.il.us	X	X	X
Cassie Eigenmann, DICKEY-john Corp.	ceigenmann@dickey-john.com	X	X	X
Arnold Eilert, Bran+Luebbe	eilert@branluebbe.com	X	X	X
Andrew Gell, Foss North America	agell@fossnorthamerica.com	X	X	X
Rich Flaugh, GSF Inc.	richf@gsfinc.com	X	X	X
Charles Hurburgh, Jr., Iowa State University	tatry@iastate.edu	X	X	X
Thomas E. Jennings, Illinois Dept. of Agriculture	TJennings@agr.state.il.us			X
G. Diane Lee, NIST/Office of Weights & Measures	diane.lee@nist.gov	X	X	X
Angelo Losurdo, Seedburo Equipment Co.	alosurdo@Seedburo.com	X	X	X
Stephen Muench, United Soybean Board	stephen_muench@sba.com			X
Ray Oberg, Zeltex, Inc.	rayo@zeltex.com	X	X	X
Don Onwiler, Nebraska Dept. of Agriculture	donlo@agr.state.ne.us	X	X	X
Richard Pierce, GIPSA	rpierce@gipsakc.gov	X	X	X
Joe Rothleder, California Dept. of Food & Ag.	JRothleder@cdfa.ca.gov	X	X	X
Jacqueline Russell, Perten Instruments	JRussell@perten.com	X	X	X
Cheryl Tew, North Carolina Dept. Of Agriculture	Cheryl.Tew@ncmail.net	X	X	X
Cliff Watson, Consultant		X	X	X
Robert Wittenburger, Missouri Dept. of Agriculture	bwittenb@mail.state.mo.us	X	X	X
Richard Wothlie, State of Maryland	wothlrw@mda.state.md.us	X	X	X
David Funk, GIPSA	dfunk@tsd.fgiskc.usda.gov	X	X	X

Appendix E

**National Type Evaluation Technical Committee
Measuring Sector
September 24-25, 1999, Olympia, WA
Meeting Summary**

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1. Update to NCWM Publication 14 to Reflect Changes to NIST Handbook 44

Background: In July 1999, the 84th National Conference on Weights and Measures (NCWM) adopted the following items that will be reflected in the 2000 edition of NIST Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, and NCWM Publication 14, National Type Evaluation Program (NTEP) Administrative Procedures, Technical Policy, Checklists, and Test Procedures. These items are part of the agenda to inform the Measuring Sector of changes that immediately affect the NTEP policy and procedures.

A) G.S.1. Identification; Serial Number

Handbook 44 Changes:

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 designation that positively identifies the pattern or design of the device;

(c) except for equipment with no moving or electronic component parts, a non-repetitive serial number; and [Nonretroactive as of January 1, 1968.]

(d) the serial number shall be prefaced by words, an abbreviation, or a symbol, that clearly identifies the number as the required serial number; and [Nonretroactive as of January 1, 1986.]

(e) the serial number shall be prefaced by the words “Serial Number” or an abbreviation of that term. 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.]

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, and 1999)

Corresponding Changes to Publication 14:

Modify Liquid-Measuring Devices Checklist paragraph 1.1.3 as follows:

- 1.1.3. ~~The serial number must be prefaced with words or an abbreviation that clearly identifies it as the serial number.~~ The serial number shall be prefaced by the words “Serial Number” or an abbreviation of that term. 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.).

Modify Electronic Cash Registers Interfaced with Retail Motor-Fuel Dispensers Checklist paragraph 1.4 as follows:

- 1.4 ~~The serial number shall be prefaced by words, an abbreviation, or a symbol that clearly identifies the number as the serial number.~~ The serial number shall be prefaced by the words “Serial Number” or an abbreviation of that term. 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.).

Discussion: The technical advisor reviewed the changes made to Handbook 44 paragraph G-S.1. at the 1999 Annual Meeting of the NCWM. There were no comments from the Sector. The Sector agreed to modify the 2000 edition of Publication 14 as noted above to reflect changes made to paragraph G-S.1.

B) Table S.2.2. Categories of Device and Methods of Sealing

Handbook 44 Changes: At its 1999 Annual Meeting, the NCWM voted to amend Table S.2.2. of the Liquid-Measuring Devices Code as follows to clarify the application of Category 2 and Category 3 requirements:

<i>Table S.2.2. Categories of Device and Methods of Sealing</i>	
<i>Categories of Device</i>	<i>Method of Sealing</i>
<i>Category 1: No remote configuration capability.</i>	<i>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</i>
<p><i>Category 2: Remote configuration capability, but access is controlled by physical hardware.</i></p> <p><i>Device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode.</i></p> <p><i>[Category 2 applies only to devices manufactured prior to January 1, 2005. Devices with remote configuration capability manufactured after that date must meet the sealing requirements outlined in Category 3. Devices without remote configuration capability manufactured after that date will be required to meet the minimum criteria outlined in Category 1.]</i></p> <p><i>[Nonretroactive as of January 1, 2005.]</i></p>	<p><i>[The hardware enabling access for remote communication must be on-site. The hardware must be sealed using a physical seal or an event counter for calibration parameters and an event counter for configuration parameters. The event counters may be located either at the individual measuring device or at the system controller; however, an adequate number of counters must be provided to monitor the calibration and configuration parameters of the individual devices at a location. If the counters are located in the system controller rather than at the individual device, means must be provided to generate a hard copy of the information through an on-site device.]*</i></p> <p><i>[*Nonretroactive as of January 1, 1996]</i></p>
<p><i>Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</i></p> <p><u><i>The device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode or shall not operate while in this mode.</i></u></p> <p><u><i>[Nonretroactive as of January 1, 2001.]</i></u></p> <p><i>Category 3 will be modified in 2005 to apply to</i></p> <p>Nonretroactive as of January 1, 2005, all devices with remote configuration capability must comply with the sealing requirements of Category 3.</p>	<p><i>An event logger 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. 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 ten 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.)</i></p>

[Nonretroactive and enforceable as of January 1, 1995.]
 (Table added 1993) (Amended 1995, ~~and~~ 1998, and 1999)

The Sector should note that similar changes were adopted to Table S.3.5. Categories of Device and Methods of Sealing in the Mass Flow Meters Code because both technologies are used in comparable applications and, therefore, are held to similar requirements.

Corresponding Changes to Publication 14:

Amend the sealing requirements of Category 3 Devices in Section 2.16. Graduations, Indications, and Recorded Representations of the Liquid-Measuring Devices Checklist as follows:

Category 3 Devices (Unlimited Remote Configuration Capability)

All devices with remote communication that are manufactured after January 1, 1999, must meet the requirements outlined for Category 3. Access to change the configuration and calibration parameters may be unlimited, or controlled through a password, if the device meets the requirements for Category 3.

- The device clearly indicates when it is in the remote configuration mode or does not operate while in this mode if manufactured after January 1, 2001 ➔ Yes ➔ No ➔ NA

Handbook 44 Changes:

At its 1999 Annual Meeting, the NCWM adopted the following new paragraph T.2.3.2. Measurement of Asphalt to Section 3.30 of the Liquid-Measuring Devices Code and renumbered existing paragraphs T.2.3.2. through T.2.3.4. accordingly.

T.2.3.2. Measurement of Asphalt. – Maintenance tolerances and acceptance tolerances shall be:

	<u>Acceptance</u>	<u>Maintenance</u>
<u>Asphalt below 50 °C</u>	<u>0.2 %</u>	<u>0.3 %</u>
<u>Asphalt above 50 °C</u>	<u>0.3 %</u>	<u>0.3 %</u>

Discussion: The Sector reviewed the new tolerances for meters used to measure asphalt. The Sector did not comment on the newly adopted tolerances.

E) S.3.3. Vapor Elimination, Accuracy Classes for Mass Flow Meter Applications, and Testing Procedures

The following changes to Handbook 44 are provided for the Sector’s information and to alert the NTEP Laboratories and manufacturers of changes to the tolerances. Tolerances are not generally listed in the Publication 14 Checklists; therefore, no changes to Publication 14 are necessary.

[Editorial Note: A note similar to that found under the Field Evaluations and Permanence Tests for Vehicle Tank Meters will be added to the corresponding Publication 14 Section for Mass Flow Meters to reflect the new paragraph N.]

Handbook 44 Changes: At its 1999 Annual Meeting, the NCWM adopted modifications to paragraph S.3.3. Vapor Elimination and Table T.2. Accuracy Classes for Mass Flow Meter Applications, and added a new paragraph N.6. Testing Procedures to the Mass Flow Meters Code as follows: (Note: Changes shown in Table T.2. below also include changes described in Sector Agenda Item 1(F))

S.3.3. Vapor Elimination. - A liquid-measuring instrument or measuring system shall be equipped with an effective vapor or air eliminator gas extractor or other effective means, automatic in operation, to prevent the measurement of vapor and air that result in errors greater than the tolerance for the minimum measured quantity (see N.1.). Vent lines from the air or vapor eliminator shall be made of metal tubing or some other suitable rigid material.

Accuracy Class	Application or Commodity Being Measured	Acceptance Tolerance	Maintenance Tolerance	Special Test Tolerance
0.3	Loading rack meters, vehicle-tank meters, home heating oil, <u>heated products (except asphalt above 50 °C) asphalt below 50 °C</u> , milk and other food products, large capacity motor-fuel dispensers (maximum discharge flow rates greater than 100 L or 25 gal per minute), all other liquid applications not shown in the table where the minimum delivery is at least 700 kg (1500 lb)	0.2%	0.3%	<u>0.5 %</u>
<u>0.3A</u>	<u>Asphalt above 50 °C</u>	<u>0.3 %</u>	<u>0.3 %</u>	<u>0.5 %</u>
0.5	Small capacity (retail) motor-fuel dispensers, agri-chemical liquids, all other liquid applications not shown in the table	0.3%	0.5%	<u>0.5 %</u>
1.0	Anhydrous ammonia, LP Gas (including vehicle tank meters)	0.6 %	1.0 %	<u>1.0 %</u>
2.0	Compressed natural gas as a motor fuel	1.5%	2.0%	<u>2.0 %</u>
2.5	Cryogenic liquid meters, liquefied compressed gases other than LP Gas	1.5%	2.5%	<u>2.5 %</u>

N.6. Testing Procedures.

N.6.1. Normal Tests. - The normal test of a meter shall be made at the maximum discharge rate developed by the installation. Any additional tests conducted at flow rates down to and including the rated minimum discharge flow rate shall be considered normal tests.

N.6.2. Special Tests. - Special tests to develop the operating characteristics of a meter and any special elements and accessories attached to or associated with the device, shall be made as circumstances require. Any test except as set forth in N.6.1. shall be considered a special test. Special test of a measuring system shall be made to develop operating characteristics of the measuring systems during a split compartment delivery. (See Table T.2.)

Corresponding Changes to Publication 14:

Add new paragraphs 37.1. and 37.2. Vapor Elimination as follows and renumber existing paragraphs 37.1. through 37.11.:

37. Measuring Element

Code Reference: S.3.3. Vapor Elimination

37.1. A mass flow metering system shall be equipped with a vapor or air eliminator or other automatic means to prevent the passage of vapor and air through the meter.

37.2. Vent lines from the air or vapor eliminator (if present) shall be made of metal tubing or other rigid material to prevent the lines from being pinched closed and re-opened without being detected.

Add a note to Section M. Permanence Tests for Mass Flow Meters to reflect new Handbook 44 paragraph N.6. Testing Procedures.

Note: The normal test of a mass flow metering system shall be made at the maximum discharge rate developed under the conditions of the installation. Any additional tests conducted at flow rates down to and including one-half of the sum of the maximum discharge flow rate and the rated minimum discharge flow rate shall be considered normal test. (Code reference N.6.)

Discussion: The Sector reviewed the modifications to Handbook 44 Mass Flow Meters Code paragraph S.3.3. Vapor Elimination, Table T.2. Accuracy Classes for Mass Flow Meter Applications, and N.6. Testing Procedures, and other application tolerances. The Sector did not comment on the newly adopted applications and corresponding tolerances.

F) Heated Products Metered with Mass Flow Meters

The following changes to Handbook 44 are provided for the Sector's information and to alert the NTEP Laboratories and manufacturers of changes to the tolerances. Tolerances are not generally listed in the Publication 14 Checklists; therefore, no changes to Publication 14 are necessary.

Handbook 44 Changes: At its 1999 Annual Meeting, the NCMW adopted the following changes to paragraphs T.1. and T.2. and to Table T.2. to recognize mass flow meter applications dispensing heated products. (Note: Changes shown in Table T.2. below also include changes described in Sector Agenda Item 1(E))

T.1. Tolerances, General.

- (a) The tolerances apply equally to errors of underregistration and errors of overregistration.**
- (b) The tolerances apply to all products at all temperatures ~~between 10 °C to 50 °C, inclusive,~~ measured at any flow rate within the rated measuring range of the meter.**

T.2. Tolerances. - The tolerances for mass flow meters for specific liquids, gases, and applications are listed in Table T.2.

(Amended 1994 and 1999)

Accuracy Class	Application or Commodity Being Measured	Acceptance Tolerance	Maintenance Tolerance	Special Test Tolerance
0.3	Loading rack meters, vehicle-tank meters, home heating oil, <u>heated products (except asphalt above 50 °C)</u> asphalt below 50 °C, milk and other food products, large capacity motor-fuel dispensers (maximum discharge flow rates greater than 100 L or 25 gal per minute), all other liquid applications not shown in the table where the minimum delivery is at least 700 kg (1500 lb)	0.2%	0.3%	0.5%
0.3A	Asphalt above 50 °C	0.3%	0.3%	0.5%
0.5	Small capacity (retail) motor-fuel dispensers, agri-chemical liquids, all other liquid applications not shown in the table	0.3%	0.5%	0.5%
1.0	Anhydrous ammonia, LP Gas (including vehicle tank meters)	0.6%	1.0%	1.0%
2.0	Compressed natural gas as a motor fuel	1.5%	2.0%	2.0%
2.5	Cryogenic liquid meters, liquefied compressed gases other than LP Gas	1.5%	2.5%	2.5%

Discussion: The Sector reviewed the new tolerances for mass flow meters used to measure asphalt and other heated products. The Sector did not comment on the newly adopted tolerances.

2. Identification of Model Number

Source: NCWM Specifications and Tolerances (S&T) Committee

Background: At the 1999 NCWM Annual Meeting, the S&T Committee considered amending G-S.1. (b) to include the word "model" to clearly identify the model designation on a device. Based on industry comments, the S&T Committee acknowledged that there are many terms used internationally, such as "type," "pattern," "design," and "style," to denote "model." These alternate terms are also often used in conjunction with the term "number." The NCWM S&T Committee recognized that, if no change was made to the current wording in Handbook 44, some manufacturers will not label the model number with a prefix that positively identifies it as the model number. If the model number is not clearly identified, it is difficult for weights and measures field officials and NTEP laboratory staff to locate the model number on the device and subsequently the corresponding NTEP Certificate of Conformance. The S&T Committee asked the NTETC Sectors and the NTEP Participating Laboratories to review the alternate terms to determine if the proposed modifications to paragraph G-S.1. are acceptable to both weight and measures officials and industry representatives.

The Sector reviewed the following proposal to modify Handbook 44 paragraph G-S.1.(b) to require a term that positively identifies the device model number to read as follows:

G-S.1. (b) a model designation that positively identifies the pattern or design of the device; and is prefaced by the term "model."

[Nonretroactive January 1, 200X]

Discussion: The Sector agreed that current G-S.1. (b) wording is very vague and lends itself to a broad interpretation of what markings positively identify the model number on a device. One Sector member noted that, while G.S.1. (b) currently requires that the manufacturer list the model number somewhere on the device, it does not require that the model number be printed on the identification plate. The Sector considered the feasibility of requiring the model number to be prefaced by words such as "model," "type," "pattern," "style," and "series" on the identification plate. The Sector decided that only "pattern" and "model" are appropriate terminology to identify the unique model number. Some Sector members believed that printing the Certificate of Conformance Number on the identification badge would eliminate many of the problems that weights and measures inspectors experience when the model number is not adequately identified. However, several manufacturers responded that it would be impractical for them to print the certificate number on their devices.

Conclusion: The Sector recommends that the NCWM S&T Committee consider modifying G-S.1. (b) as follows:

G-S.1. (b) a model designation that positively identifies the pattern or design of the device; *and is prefaced by the term "model" or "pattern."*
[Nonretroactive January 1, 200X]

The Sector recommends that this requirement be non-retroactive to provide enough time for manufacturers to modify their identification badges.

3. Duplicate Receipts

Source: NCWM Specifications and Tolerances Committee

Background: The NCWM adopted a requirement to identify duplicate receipts generated by taximeters based on concerns that duplicate receipts could be used fraudulently. In 1999, the NCWM also considered the Specifications and Tolerances (S&T) Committee proposal to add a new paragraph to the Handbook 44 General Code to require that all duplicate receipts be clearly labeled with the words "duplicate" or "copy."

During the 1999 NCWM Annual Meeting, a retail motor-fuel dispenser manufacturer indicated that Publication 14 already addresses duplicate receipts printed by retail motor-fuel dispensing systems. Following that meeting, the S&T Committee asked for input on whether the proposed requirement should apply to all device types (and, thus, be included in the General Code) or should apply only to specific device types such as taximeters (and thus, be included only in specific device codes). The S&T Committee also agreed that it might be appropriate to develop design requirements, in addition to General Code paragraph G-S.2. Facilitation of Fraud, as a basis for Publication 14 criteria which prohibit fraudulent use of duplicate receipts.

The S&T Committee noted that the latest generation of electronics already enable liquid-measuring device ticket printers to generate duplicate receipts such as those seen on vehicle tank metering systems; therefore, the Committee agreed that it is important to establish requirements as quickly as possible to address such features. The S&T Committee noted that it might be inappropriate to dictate the same requirements for printed and handwritten receipts. Some NCWM members questioned the capability of mechanical and non-intelligent printers to provide duplicate receipt information. The S&T Committee asked the regional associations for input about problems officials encounter when systems have the capability to issue duplicate receipts.

The Sector reviewed the following proposal to add new paragraph G-S.5.6.2. Duplicate Receipts to Handbook 44 General Code which is being considered by the S&T Committee:

G-S.5.6.2. Duplicate Receipts. - A recording element may produce a duplicate receipt for the previous transaction provided the information printed is identical to the original with the exception of time issued. The duplicate receipt must include the words "duplicate" or "copy."
[Nonretroactive as of January 1, 200X]

Discussion: The Sector considered several examples of situations where it is appropriate to issue a "duplicate" receipt, such as when a ticket is irretrievably jammed in the device, or a power outage. The Sector concluded that if a receipt is printed at a retail motor-fuel dispenser and at the console, both receipts might be considered original receipts. Several Sector members favored printing a sequential transaction number on the receipt which would be the same on original and duplicate receipts; however, one regulatory official was concerned about enforcing a requirement for sequential numbering of receipts. The Sector did not believe that this would prevent fraud because the customer would not understand the significance of the transaction number.

Conclusion: The Sector recommends that the NCWM S&T Committee consider adding specific requirements to each of the appropriate code sections in Handbook 44 to address duplicate receipts rather than adding a requirement to the General Code. The Sector had no recommendations for additions to specific device codes.

4. Width of Index and Graduations

Source: 1998 National Type Evaluation Technical Committee (NTETC) Measuring Sector Meeting

Background: At the 1998 Sector meeting, the Sector recommended amending paragraph S.1.5.3.(a) Width; Indicator Index of the Liquid-Measuring Devices Code to read as follows:

S.1.5.3. Width.

(a) The index of an indicator shall not be wider than the width of the ~~widest~~ narrowest graduation.*

(b) If the index of an indicator extends over the entire length of a graduation, it shall be of uniform width throughout the portion that coincides with the graduation.

[*Nonretroactive as of January 1, 200X.]

The NCWM Specifications and Tolerances (S&T) Committee included this recommendation on its 1999 Agenda. At the 1999 Annual Meeting, the S&T Committee considered comments that paragraph S.1.5.3. is currently correct because a wider index design facilitates reading of the graduation. In contrast, when the index design is narrower than the narrowest graduation, reading the indication to the nearest graduation can be difficult. The S&T Committee acknowledged that the position favoring current paragraph S.1.5.3. is valid; however, the uncertainties associated with reading indices when the graduations are obscured cause other concerns.

The S&T Committee heard comments that many analog indicators are still being used; however, the proposal only applies to new devices. Measurement Canada re-stated that it believes that the proposal is a more appropriate design requirement for indices than what is presently included in Handbook 44. The NCWM S&T Committee agreed that the proposal is more appropriate. Unless the S&T Committee receives more data to support the existing Handbook 44 language, the S&T Committee will return the proposal to voting status at the 2000 NCWM Interim Meeting.

Discussion: The Sector recognized that devices that meet the more stringent requirement in proposed paragraph S.1.5.3. also meet the current Handbook 44 requirements. If Handbook 44 is not modified, the NTEP Laboratories will continue to require the more stringent requirements for mutual recognition tests.

Conclusion: The Sector recommends that the NCWM S&T Committee collect more feedback about the proposed change to paragraph S.1.5.3. before the NCWM votes on this issue.

5. Test Method for Card-Activated Retail Motor-Fuel Dispensers

Source: Gordon Johnson (Gilbarco, Incorporated)

Background: During an initial evaluation of a single hose dispenser used to meter propane, NTEP laboratory representatives noticed that Sections 17.2.4. and 17.2.5. of NCWM Publication 14 specified different requirements for single and multiple hose dispensers. Section 17 of the Checklist for Liquid-Measuring Devices outlined one set of requirements for single-hose dispensers (17.2.4.) and a different set of requirements for multi-hose (17.2.5) dispensers. The NTEP laboratories met in May 1999 and agreed to recommend that the Sector remove paragraph 17.2.4. and require all dispensers comply with 17.2.5.

Discussion: The Sector agreed that the wording in paragraph 17.2.5. is appropriate for all types of dispensers. One NTEP laboratory pointed out that having the dispenser remain "authorized" for 15 seconds allows customers to change their minds about which grade of fuel to purchase. The Sector believes that this is appropriate because it would take more than 15 seconds for the next customer to pull up to a dispenser and begin dispensing fuel.

Conclusion: The Sector agreed to modify Publication 14 by removing paragraph 17.2.4. and the wording "For multi-hose dispensers;" renumbering existing paragraphs 17.2.5. through 17.2.8.; and adding a new note to explain the term "handle" as follows.

~~17.2.4. Turn the dispenser "handle" on and use a card to authorize the dispenser.~~

~~Turn the handle off, then on. Try to deliver product; the dispenser must not dispense.~~

~~For multi-hose dispensers:~~

~~17.2.54. Turn the dispenser "handle" on and use a card to authorize the dispenser.~~

~~Turn the "handle" off. After a period of 15 seconds, turn the "handle" on.
Try to deliver product; the dispenser must not dispense.~~

Note: The term "handle" generically refers to the handle, flapper, button, on/off switch, or other mechanism used to activate or deactivate the dispenser.

6. Sealable Parameters for Retail Motor-Fuel Dispenser Systems

Source: California Division of Measurement Standards

Background: A field inspector contacted the California Division of Measurement Standards (DMS) after discovering a retail motor-fuel dispenser (RMFD) with the capability to adjust RMFD blend ratio settings through a remote console. In reviewing the system, the DMS determined that the fixed blend valves in the dispenser were replaced with adjustable electronic blend valves. Information from the manufacturer indicated that the dispenser had an event counter for the blend ratio; however, the Certificates of Conformance for that dispenser and console did not cover an audit trail as the means for sealing electronic blend valves.

During the 1999 meeting of the NTEP Laboratories, the laboratories agreed that the Certificates of Conformance (CC) should state the category of the device under the sealing section.

Discussion: The manufacturers acknowledged that there are problems with sealed parameters that were never type evaluated. The Sector agreed that it is important for the laboratories to have uniform interpretations about the amount of effort that is necessary to access the audit trail. Uniform guidelines ensure that laboratories approve devices that allow any weights and measures inspector to view the audit trail. Most of the Sector members agreed that, ideally, no more than two keystrokes should be required to view the audit trail, although many devices currently require more than two keystrokes.

Conclusion: By the 2000 NCWM Interim Meeting, the Gasoline Pump Manufacturer's Association and Meter Manufacturer's Association agreed to develop reasonable test criteria for evaluating the "ease of access" to an audit trail. The RMFD and console controller manufacturers will review their Certificates of Conformance to determine if the "Sealing" section adequately addresses the category of sealing and how to access and exit the audit trail for their devices. If necessary, the manufacturers will supply NTEP with additional information about the audit trail.

Certificates of Conformance will list the sealing feature and the category of sealing in the Standard Features and Options Section of the Certificate of Conformance. The NTEP Laboratories will also list the procedure for accessing and exiting the security for sealable parameters under the CC "Sealing" section.

7. Stationary Cryogenic Cylinder Filling

Source: California Division of Measurement Standards

Background: The California NTEP Laboratory reported problems with cryogenic products vaporizing during the type evaluation of a stationary cylinder-filling device. Filling smaller cylinders with a dry hose resulted in significant errors, thus making the dry hose configuration unsuitable for this application. California asked the Sector to determine if it is appropriate to ask the NCWM to consider amending Handbook 44 Cryogenic Liquid-Measuring Devices Code paragraphs S.3.2. Discharge Hose and/or UR.2.4. Drainage of Discharge Line to address operations designed for filling small portable containers. In addition, the California laboratory asked the Sector to consider if dry-hose deliveries should be prohibited for small volume deliveries. The NTEP Measuring Laboratories discussed this issue at their May 1999 meeting. California Division of Measurement Standards (DMS) agreed to provide information about possible applications where dry hose applications might be appropriate.

Discussion: Charlie Nelson (California NTEP Laboratory/DMS) and Jeff Kelly (Hoffer Flow Controls) explained the process for measuring cryogenic liquids to the Sector. They explained that keeping the product in a liquid state and preventing flashing of the product requires cooling the hose to the temperature of the product. This is generally accomplished by circulating product back through the supply tank in a jacketed coaxial supply line; however, some of the product evaporates during this process of cooling the supply line. The customer is not charged for the product that evaporates. At the end of the each delivery, some product is left in the line. The customer is charged for the product that remains in the hose because the overfill valve prevents additional product from entering the customer's tank. For safety reasons, product cannot remain in the hose for very long and generally is drained to the atmosphere through an open cock valve at the end of the hose.

Conclusion: The Sector agreed that this issue needs further development. Charlie Nelson and the cryogenic measuring device manufacturers agreed to develop requirements for cryogenic measuring devices that meter liquid into cylinders. After developing proposed changes for Handbook 44, the group will come back to the Sector before forwarding a proposal on behalf of the Sector to the NCWM Specifications and Tolerances Committee.

8. Discount Fueling Using a Point-of-Sale (POS) System

Source: California Division of Measurement Standards

Background: Gilbarco, Inc., and Convenient Fuel Group developed a retail motor-fuel dispensing point-of sale (POS) system which gives discounts on gasoline and other purchases. The system operates by tracking purchases through POS systems, similar to discount plans given at supermarkets. By tracking trends in consumer purchases, the system can promote sales on selected items.

The NTEP Measuring Laboratories agreed that a dispenser must be capable of indicating and computing all sales prices when the unit prices are discounted. The NTEP laboratories also reviewed the definition of price contract sales.

Discussion: Several NTEP laboratories provided examples of problems they discovered when testing POS systems that calculate discount pricing based upon purchases. The laboratories pointed out that many of these POS systems exhibit rounding errors when the price per unit changes based upon the number of purchases. One laboratory explained how the rounding errors occur using an example of a weighing application where the price per pound of a weighed commodity is adjusted based upon the previous quantities purchased. If the POS system has to "back-calculate" the net weight of the product purchased based upon the unit price and total price of the item, the following formulas are typically used:

$$(\text{"back - calculated" net weight}) = \frac{(\text{total price @ original unit price})}{\text{original unit price}}$$

and then

$$\text{"back-calculated" net weight} * (\text{adjusted unit price}) = \text{total price @ adjusted unit price}$$

Calculating the total sale at the adjusted price in this manner sometimes results in a difference of several cents in the total prices than if the adjusted price is calculated by weighing the product on a scale and multiplying the weight times an adjusted unit price. This example could also apply to products sold by volume.

The Sector was also concerned that in some instances the adjusted price applies only to an exact quantity of product (e.g., 10 gallons of motor fuel). The Sector questioned how the dispenser/console controller would display the unit price and calculate the total price, if the customer decided to purchase more product at the non-discounted price.

Conclusion: The Sector agreed that no action is currently required by the Sector. The Sector agreed that, regardless of the method used to calculate the discount, the calculations must be mathematically correct.

9. Permanence of Labeling on Retail Motor-Fuel Dispensers

Source: Gordon Johnson (Gilbarco, Incorporated)

Background: The NIST Office of Weights and Measures received an inquiry from Gordon Johnson about the specifications for the identification plate on a retail motor-fuel dispenser. Mr. Johnson requested an interpretation on the philosophy of "permanence" and how that philosophy relates to the location of the label. He was concerned about the criteria in Publication 14 (scales vs. meters) and the requirement for the labeling information to remain with the device. He also questioned whether or not a label should last for 100 years when the life expectancy of the device is 12 years. Mr. Johnson indicated that there are numerous complaints from weights and measures officials who must chip ice away from the bottom of dispensers to read labels affixed to the most permanent part of the dispenser cabinet. Inspectors have found similar situations when the bottom of the dispenser is impossible to access, such as when several inches of concrete is inadvertently poured around the base of a dispenser.

Gilbarco was developing new labels for its next generation of devices. According to Gilbarco, Underwriters Laboratories, Inc., had no problem with the new labels. The labels are laser printed on "tamper evident" plastic tags that include supplemental bar coding.

The NTEP laboratories felt that Handbook 44 should address the intent of permanence. The laboratories also agreed that tamper evident identification tags are appropriate.

Discussion: Sector members had several different interpretations of the permanence requirements for identification plates. Several manufacturers thought that they were required to manufacture their identification plate from metal although Publication 14 states the following:

"The information may be on a metal or plastic plate attached that is attached with pop rivets, adhesive, or other means, but removable bolts or screws are not permitted. A foil or vinyl badge may be used provided that it is able to survive wear and tear, remains legible, and is difficult to remove. The printing on a foil badge must be easily readable and not easily obliterated by rubbing with a relatively soft object (e.g., the wood of a pencil)."

The Sector agreed that the intent of the permanence requirement for identification badges is to allow the marking information to remain legible for a reasonable period of time and ensure that the information cannot easily be transferred to another device. Several state weights and measures representatives pointed out that they seldom find problems with identification badges being switched on devices.

Conclusion: The Sector agreed that tamper evident labels satisfy the permanence criteria specified by Handbook 44 paragraph G-S.1. The Sector also agreed that Publication 14 adequately defines the permanence requirements for marking information. Therefore, the Sector does not favor modifying the existing text in Publication 14.

10. Printed Receipts for Prepaid Retail Motor-Fuel Dispenser Deliveries

Source: Maryland NTEP Laboratory

Background: The Maryland NTEP Laboratory asked the Sector to determine if there are any conflicts in the various Publication 14 checklist criteria for printed receipts issued for prepaid retail motor-fuel dispenser sales. The Maryland Laboratory questioned if additional information is required on receipts if the total value of the sale is less than the prepaid amount. Questions were asked about the type of receipt and specific transaction information required in the examples of prepaid transactions below.

Examples:

- (1) A customer pays \$20.00 for gas, dispenses \$20.00 of gas, and asks the attendant for a receipt.
- (2) A customer pays \$20.00 for gas, dispenses \$15.50 of gas, and asks the attendant for a receipt.

The NTEP Measuring Laboratories agreed that the same information that appears on a post-pay receipt, as required by Handbook 44 paragraph S.1.6.7. Recorded Representations, is appropriate for receipts issued in a prepay application. Paragraph S.1.6.7. requires the receipt to specify the total volume of the sale, the unit price, the total computed price, and the product identity by name, symbol, abbreviation, or code number.

Discussion: Several manufacturers were concerned that their existing equipment is not designed to provide the same information for both prepay and postpay transactions. After reviewing paragraphs G-S.5.1. Indicating and Recording Elements; General and S.1.6.7. Recorded Representations, the Sector agreed that it is appropriate to change Publication 14 to reflect the intent of paragraph S.1.6.7.

Conclusion: The Sector voted 16 in favor, 1 opposed, and 1 abstention for modifying paragraph one of Section 3. Recorded Representations, Point-of-Sale System of the ECRs/Retail Motor-Fuel Dispensers checklist as follows:

3. Recorded Representations, Point-of-Sale Systems

A sales receipt showing the quantity, unit price, total price, and product identity for each fuel delivery in a transaction is required for point-of-sale systems. A printed receipt must be always available to the customer upon request, but is not required for a prepaid transaction completed to the prescribed amount.

11. Number of Tests of Meters Used in Retail Motor-Fuel Dispensers

Source: Maryland NTEP Laboratory

Background: Will Wotthlie (Maryland) asked the Sector to consider revising the initial examination criteria for meters used in retail motor-fuel dispensers. Paragraph two of Section A in the Field Evaluation and Permanence Test Procedures

for Meters on page 10-87 of the May 1998 edition of Publication 14 required two meters to undergo at least two tests at the fast flow rate and two tests at the slow flow rate. Mr. Wotthlie indicated that at a minimum, a test at a mid-flow rate should also be evaluated.

The NTEP Laboratories discussed this item at the May 1999 meeting and agreed that testing at a mid-flow rate is appropriate. The laboratories also felt that the type of test specified for the fast and slow flow rates should be more consistent with other meter types and concluded that, at a minimum, the NTEP laboratory should conduct five normal, two mid-range, and five slow flow rate tests.

Discussion: Some of the manufacturers felt that retail motor-fuel dispenser meters should undergo the same amount of testing as other types of meters. After discussing the difference for testing performed on different types of meters, the Sector voted in favor of expanding the number of tests required for retail motor-fuel dispensers. While discussing this issue, the Sector noted that none of the laboratories use the statistical test procedures for newly designed meters referenced in Section C of the Field Evaluation and Permanence Test Procedures for Meters on page 10-88. Consequently, the Sector agreed to remove this paragraph from the checklist.

Conclusion: The Sector agreed with the NTEP Laboratories' recommendation to modify the number of tests for newly designed meters in retail motor-fuel dispensers in the Field Evaluation and Permanence Test for Meters as follows:

Initial Examination

At least one meter will be chosen for throughput testing on each of two major products (e.g., unleaded gasoline and diesel fuel). At least ~~two~~ five tests at both the fast and slow flow rates and two midrange flow rate tests will be run on each of these two meters. Only one test at each flow rate needs be run on any remaining meters. If both products are not available for the type evaluation, the test may be performed using one product and a Provisional Certificate of Conformance may be issued for the one product. The test using the other product may be performed later to result in a full Certificate of Conformance.

Subsequent Examination

- ~~Two~~ Five tests at both fast and slow flow rates, and two midrange flow rate tests will be made on the throughput meters. Only one test at each flow rate need be run on any remaining meters.**

The Sector also agreed to delete Paragraph C Draft for Study – Permanence Test of Retail Motor-Fuel Dispensers Using New Design Meters on page 10-88 of the checklist.

The above changes will appear in the next edition of Publication 14.

12. Considerations When Testing Liquefied Petroleum Gas (LPG) Meters

Source: Maryland NTEP Laboratory

Background: Will Wotthlie (Maryland) asked the Sector to review existing Publication 14 LPG test criteria to determine whether or not the laboratories should consider pressure and temperature, when they perform the repeatability test on an LPG meter. Publication 14 checklist repeatability test criteria only specify maintaining the approximate same flow rate.

When the NTEP Measuring Laboratories discussed this item at the May 1999 meeting, they pointed out that minor changes in the flow rate significantly affect the results of the repeatability test.

Discussion: The Sector discussed the influence that pressure and temperature have on the repeatability of test results on meters used to measure LPG. The Sector acknowledged that during the repeatability test factors such as temperature and pressure may significantly change. Ross Andersen (New York NTEP Laboratory) commented that a beach umbrella shields test equipment and product from the temperature effects of the sun. Representatives from Measurement Canada noted that they have incorporated guidelines for variances in their test procedures.

Conclusion: The Sector agreed to add a note to Publication 14 paragraph I, Repeatability on LPG to NH₃ Meters on page 10-89, to alert the laboratories that variances in temperature and pressure affect repeatability test results on LPG meter as follows:

I. Repeatability on LPG to NH₃ Meters:

When multiple tests are conducted at approximately the same flow rate, the range of the test results for the flow rate shall not exceed 40 percent of the absolute value of the maintenance tolerance and the results of each test shall be within acceptance tolerance. This tolerance does not apply to the test of the automatic temperature compensating system.

Note: Stable temperature and pressure indications are necessary during the entire repeatability test to achieve good test results

The NTEP laboratories agreed to review the guideline compare it with Canada's test procedures, and develop recommendations for the next Sector meeting.

13. Software-Based Console Controllers

Source: Maryland NTEP Laboratory

Background: Will Wotthlie (Maryland) asked the Sector to interpret the Software Working Group's policy decision on evaluating software-based console controllers (that is, consoles consisting of software installed on generic computer hardware). In 1998, the Measuring Sector also discussed this issue in Albuquerque, NM. The Gasoline Pump Manufacturer Association (GPMA) also developed a position letter indicating that GPMA would not pursue bringing an end to type evaluation of software-based consoles.

Discussion: The Sector acknowledged that NTEP has not evaluated a large number of software-based console controllers. Many weights and measures inspectors have difficulties testing consoles because the software identification information is not always readily available. Some jurisdictions proceed cautiously because of concerns over inadvertently shutting down the entire system or unfamiliarity with computer systems. Several jurisdictions have enacted policies prohibiting inspectors from searching through what may be several program levels to locate software identification and version information.

The NTEP Laboratories indicated that software-based console controllers should provide easy access and should readily display software information. Steve Malone (Nebraska) pointed out that it is often easy to determine if the system does not meet the Handbook 44 specifications by looking at the receipt generated by the system. Canadian representatives told the Sector that Canada stopped evaluating console controllers about 10 years ago because Canada viewed this component as performing only basic calculations. However, the increase in the number of software-based systems may prompt Canada to begin testing of console controllers again. Several manufacturers emphasized that many console controllers perform very few metrological functions, such as stacked sales, and communicate configuration information to the dispensers. One NTEP Laboratory noted that consoles capable of stacking sales and remotely configuring dispensers warrant an evaluation.

Conclusion: The Sector agreed that NTEP will continue to type evaluate console controllers.

14. Testing of Single Compartment vs. Split Compartment Vehicle Tank Meters

Source: Maryland NTEP Laboratory

Background: Will Wotthlie (Maryland) asked the Sector to determine if there are applications where it is appropriate to eliminate the split-compartment test (sometimes referred to as product depletion test) for vehicle tank meters. Will questioned whether or not vehicle-mounted mass flow meters must go through a split-compartment test if the manufacturer intends that the meter be used on vehicles with a single compartment.

Discussion: The Sector agreed that *all* vehicle-mounted meters should pass a split-compartment test because even a single compartment can run dry and introduce air into the supply lines. One Coriolis mass flow meter manufacturer stated that Coriolis mass flow meters, unlike other device technologies, can track the density of the product in the meter. If the system is correctly configured, when air enters the meter the mass flow meter transmitter will recognize the density drop and send a signal to stop pumping and registering product.

Conclusion: The Sector agreed that before vehicle-mounted applications are listed on an NTEP Certificate of Conformance, the meter must pass a split compartment test. The Sector agreed that specific procedures are needed; the NTEP laboratories will develop specific procedures. In the meantime, testing will be conducted using the same ad hoc

procedures as used in past evaluations. The Sector agreed that this policy will apply to all meter technologies (e.g., Coriolis mass flow meters, turbine meters, positive displacement meters) even if the meter will never be installed on trucks with more than a single compartment. The permanence test still applies to include the throughput and with a duration of at least 20 days. The Sector agreed that, ideally, this test will be performed with a multiple-compartment vehicle; however, a single-compartment vehicle may be used to simulate the split-compartment test by running the tank empty if a multiple-compartment vehicle is unavailable.

15. Adding Ethane to the Mass Flow Meter Family of Products Table

Source: Andre Noel (Schlumberger Resource Management Services)

Background: Schlumberger received a customer inquiry about the approval for metering ethane through a Schlumberger mass flow meter. Ethane is a compressed liquid with a specific gravity of 0.3. Schlumberger noted that ethane falls outside the parameters in the new Mass Flow Product Group Table since the lowest specific gravity covered by the table in the compressed liquid group is 0.5. The Table was designed to reflect all of the products that could be used with mass flow meter technology. Unfortunately, the Sector did not consider ethane when it developed the table in 1998. Schlumberger believes that ethane represents the compressed liquid with the lowest specific gravity which would justify modifying the table. The Sector was asked to consider Schlumberger's proposal to modify the table:

Direct Mass Flow Product Group Table			
Product Groups	Typical Products	Specific Gravity	Minimum Test Requirements to Cover Entire Subgroup*
Normal Liquids	Water, Alcohols, Glycols, Water Mixes thereof, Agricultural Liquids, Fertilizers, Chemicals, Petroleum Solvents, Herbicides, and Suspensions	0.7 to 2.5	Test with one liquid having a specific gravity of 0.7 Test with one liquid having a specific gravity of 2.5
Compressed Liquids	Propane, Butane, <u>Ethane</u> , Freon 11, Freon 12, Freon 22, NH ₃ , etc.	<u>0.3</u> 0.5 to 0.68	Test with one product having a specific gravity at any point within the range <u>0.3</u> 0.5 to 0.68
Compressed Gases	CNG	0.6 to 0.8	Test with one product having a specific gravity at any point within the range 0.6 to 0.8
Cryogenic Liquids (BP 152 °C) and Liquid Natural Gas	Liquefied Oxygen, Nitrogen, etc.	0.07 to 1.4	Test with one liquid having a specific gravity at any point within the range 0.07 to 1.4.
Heated Products (above 50 °C)**	Bunker C, Asphalt, etc.	0.8 to 71.2	Test with one liquid having a specific gravity of 0.8 Test with one liquid having a specific gravity of 1.2

Discussion: Andre Noel explained that the physical properties of ethane are very similar to propane. One manufacturer pointed out that while the properties are similar, ethane represents a lower density product which is less likely to pass an NTEP evaluation. Canada commented that they would not expand a product group to include ethane without testing the performance of devices metering ethane.

Conclusion: The Sector voted 12 in favor, 3 opposed, and 1 abstention to adding ethane to the family of products table for mass flow meters and positive displacement meter. The changes to the family of products table are shown above for mass flow meters and below for positive displacement meters.

C. Product Families for Positive Displacement Meters and Mass Flow Meters

Product Family	Product Subgroup	Typical Products	Viscosity (SSU ¹)	Specific Gravity ²	% Abrasive Solids
.
.
Compressed Gases, Liquefied	LPG ³	Propane, Butane, Ethane, Freon 11, Freon 12, Freon 22, etc.	0.5 to 3 SSU 0.1 to 0.5 centipoise	0.53 to 0.65	None
	NH ₃ ³	Anhydrous Ammonia	0.5 SSU 0.1 centipoise	0.56 to 0.68	None
.
.
.
... ² The specific gravity of each product family is determined as the ratio of the product mass (@ 15.6 °C (60 °F) petroleum products and 20 °C (68 °F) all other products) to the mass of an equal volume of distilled water at 4 °C (39 °F).					

16. Multi-Product Testing of Mass Flow Meters

Source: Andre Noel (Schlumberger Resource Management Services)

Background: During the 1998 NTETC Measuring Sector meeting in Albuquerque, NM, the Sector developed the Direct Mass Flow Product Group Table. The Sector also developed test criteria for meters that measure several products with different specific gravities without any change to the meter calibration. The intent of this test was to verify the claim that a meter is capable of measuring multiple products over a restricted range of specific gravities without recalibrating the meter, thereby covering a device for a multi-product application.

After the 1998 meeting, several Sector members developed different interpretations of the test criteria for multi-product testing. Schlumberger’s interpretation is that after its metering devices pass the multi-product test, the manufacturer can use them in multi-product applications regardless of the specific gravity range the device originally demonstrated it could cover.

The objective of the NTEP multi-product test is to verify that the mass flow meter meets the basic fundamental test criteria for products that are listed on the manufacturer’s Certificate of Conformance, namely, that the meter can be used for multiple products regardless of where they fall within the stated specific gravity range without any adjustment to the meter calibration or zero. Prior to sealing the device in a multi-product field application, the local weights and measures inspector conducts accuracy tests on the products that represent the extremes of the specific gravity range.

Measurement Canada conducts multi-product approval tests on all mass flow meters with two products representing a specific gravity range of approximately 0.3. Canada requires empirical data to support expanding the application to products which fall outside of the 0.3 range or band. For example, consider a device which is approved for multi-products with a specific gravity range of 0.7 to 1.0. Before the original equipment manufacturer (OEM) can cover products outside that 0.3 range, such as products with 0.6 or 1.1 specific gravity, data must be provided on those new applications.

Discussion: The Sector reviewed the following technical policy covering the multi-product test, which was based on decisions made at its 1998 meeting:

S. Product Families for Mass Flow Meters

Multi-product applications (that is, applications in which the meter will be used without a change to zero or calibration to dispense different products which vary in specific gravity by more than 0.1) must include a

multi-product test. The multi-product test will be performed on the meter without a change to zero or calibration using multiple products having a difference in specific gravity of at least 0.2. For devices which will be used to dispense multiple products having a specific gravity range greater than 0.2, the multi-product testing must be performed over the anticipated range before multi-product applications will be included on the CC. For the multi-product testing, throughput testing will be performed on one or a combination of the products; testing for the subsequent test will be conducted on both products. Multi-product testing requirements do not apply to meters used to dispense a product such as propane in which the density varies in normal operation.

The Sector agreed that the wording is correct.

Conclusion: The Sector confirmed its 1998 decision. A multi-product test is conducted to demonstrate that a meter can accurately measure multiple products over a specified range of specific gravities without changing zero or calibration. The specific range of specific gravities tested and covered without changing the calibration for multiple product applications and the testing required are addressed in the policy shown above. The Sector recognized that the U.S. policy for multi-product testing differs from Canada's policy. The U.S. allows multi-products covered to move across the range of specific gravities already approved in the product family.

17. Compatibility of Electronic Components

Source: Andre Noel (Schlumberger Resource Management Services)

Background: Andre Noel asked the Sector to determine if it is appropriate for NTEP to cover the interface of approved components, where the compatibility of those components is later verified during the initial verification test by a weights and measures field official.

It appears that NTEP tests are not administered equally across the different technologies. For example, NTEP evaluations for mechanical and electronic registers used in vehicle tank meter and bulk terminal applications have not been subjected to the same evaluation as comparable systems in mass flow meter applications. One NTEP Laboratory representative noted instances in which electronics approved for petroleum product applications were interfaced with devices used to dispense liquefied petroleum gas or cryogenic products; the resulting systems no longer met Handbook 44 and Publication 14 requirements.

Schlumberger noted that liquid-measuring device manufacturers have made significant investments in testing equipment to attain NTEP approval. The device manufacturer also incurs extra costs to ensure that equipment is compatible with other NTEP approved devices operating at custody transfer sites in the marketplace. Schlumberger stated that it understands customer and industry requirements when its electronic equipment is interfaced with associated equipment. Schlumberger wants to provide its customers with the option to select the equipment that best suits their needs. Schlumberger views this approach as no different than the industry practice of interfacing equipment via pulse or serial communications.

Schlumberger reiterated that approved devices should not undergo a separate NTEP evaluation to determine compatibility with other devices. Schlumberger believes that requiring a device to complete an additional 30-day permanence test where it must remain within acceptance tolerance is unreasonable because those electronic components already have NTEP CCs. Schlumberger verifies equipment compatibility prior to a sale or the State or local jurisdictions approving the installation. Schlumberger does not ask its customers to pursue state or local jurisdiction approval of a site application without guaranteeing that the devices are compatible. Therefore, Schlumberger recommends testing for compatibility should only be conducted during field level evaluations.

Measurement Canada adheres to a policy of allowing the original equipment manufacturer to create a new system pending a compatibility evaluation by the field official at the installation site. Canada instituted this practice, in part, to alleviate some of the administrative procedure. Canada noted that their compatibility evaluation has many conditional requirements.

Discussion: Several retail motor-fuel dispenser manufacturers cited examples of tests that they performed to approve the combination of separate components that were previously individually tested by NTEP. This prompted the Sector to discuss what the phrase "may be interfaced with approved and compatible equipment" means on an NTEP certificate. Several Sector members noted that most weighing and measuring devices are interfaced with an indicator that represents an equivalent type used during type evaluation. Mass flow meters type evaluated as stand-alone systems are not tested in

combination with a separate indicating element because mass flow meter transmitters are generally capable of indicating all of the required metrological information.

Conclusion: The Sector voted 2 in favor, 14 opposed, and 1 abstention for compatibility test of NTEP equipment during the initial field evaluation of a system. The Sector agreed that similar devices individually tested for a similar application can be "mixed and matched" without additional testing if the system functions properly during the initial routine field test. For example, inspectors can determine the compatibility of an approved console interfaced with an approved retail motor-fuel dispenser during a field evaluation when both components have previously been approved in like applications. If devices are to be used in dissimilar applications, then additional NTEP testing is required.

18. Recorded Representation of Count Items on Electronic Cash Register (ECR) Systems

Source: Maryland NTEP Laboratory

Background: Will Wotthlie (Maryland) reported finding ECR receipts with items by count expressed in a decimal format with as many as three digits to the right of the decimal point. At the May 1999 NTEP laboratory meeting, several NTEP Laboratories reported finding similar problems with receipts. Publication 14, ECRs/Retail Motor Fuel Dispensers Checklist paragraph 3.7 Recording Representations page 9-11 states that decimal expressions of count are acceptable provided that "fractions of a whole unit can not be expressed." It was not clear to the laboratories why it is necessary for any device to print trailing zeros after the decimal point for items sold by count.

Discussion: The Sector considered deleting the following text from paragraph 3.7 of the ECRs/Retail Motor-Fuel Dispensers checklist as follows:

~~3.7. The quantity representation of an item sold by count must be expressed in whole units.—An expression of count with a decimal point and trailing zeros, (e.g., 2.00 items) is acceptable provided that fractions of a whole unit can not be expressed.~~

Weights and measures representatives noted several instances where they found devices that violated the existing paragraph 3.7. Industry representatives were not certain of the ramifications of prohibiting trailing zeros for items sold by count.

Conclusion: The Sector agreed that it may be unnecessary to display the trailing zeros on a receipt for items that are sold by count. However, several manufacturers wanted to consult with their software division to determine the ramifications of prohibiting the trailing zeros. The NTETC Weighing Sector is also asked to discuss this issue. Both Sectors will be balloted the first week of November 1999 to determine if prohibiting the expression of items by count with a decimal point and trailing zeros is acceptable. The ballot will list the proposal to change paragraph 3.7. shown above.

19. Location of ID Information Required by G-S.1. Identification

Source: Ohio NTEP Laboratory

Background: Jim Truex (Ohio) received an inquiry from another NTEP laboratory about the location of marking information required by paragraph G-S.1. Identification on a point-of-sale system previously evaluated by the Ohio laboratory. During field evaluation of the same model officials complained that the required markings are located behind a door. The Certificate of Conformance (CC) for the device explains where the markings are located; however, field officials contend that, without knowing the model designation from the ID plate, they do not know which CC to try to locate. At the time of the evaluation, the Ohio laboratory determined that the markings met the requirements of Handbook 44 and Publication 14. NIST-OWM concurred with Ohio's interpretation of G-S.1. The NCWM S&T Committee reviewed paragraph G-S.1. in 1985 because of similar questions relating to the location of required markings on weighing elements installed in checkout stands. The Committee determined that required markings could be located under a scale platter or behind a door if no tool was required to access the markings. The Sector was asked to review paragraphs G-S.1. and G-UR.2.1.1. Visibility of Identification to determine if NTEP's previous interpretation of the requirement is correct.

Discussion: The Sector supported Ohio's interpretation that it is acceptable to place marking information behind a door or under a cover. The Sector reviewed the marking requirement sections of the LMD Checklist and ECRs/Retail Motor-Fuel Dispensers Checklist and found that the ECRs checklist prohibits placing the marking information under a cover or behind a door.

Conclusion: The Sector agreed to delete the word "not" from the note in section 1. Identification of the ECRs/Retail Motor-Fuel Dispensers Checklist on page 9-8 of Publication 14 to make the marking requirement consistent in both checklists as follows:

1. Identification

Note: *A location under a cover or inside a panel door is ~~not~~ acceptable. Visibility may be achieved by placing a duplicate serial number badge on the front, side, or top of the ECR. This badge may contain only the serial number if the other information is visible elsewhere on the ECR.*

The above changes will appear in the next edition of Publication 14.

The Technical Advisors will review Publication 14 to determine if other paragraphs need to be modified to make marking information criteria consistent and agree with Handbook 44.

20. Temperature Compensation of Vehicle-Tank Meters

Source: Oregon/California Weights and Measures

Background: Several weights and measures jurisdictions have found vehicle-tank meters installed with a temperature compensation feature. Handbook 44 and Publication 14 do not address how to test vehicle-tank meters that are equipped with temperature compensation, nor does either document include specifications or tolerances for these components. NTEP has issued several Certificates of Conformance (CC) for vehicle-tank meters that appear to cover systems with temperature compensation. This confusion occurred because this equipment may be used in various applications and the CC text describing the temperature compensation feature does not distinguish which application is covered for the temperature compensation feature. Additional text may be necessary on the CCs to clarify which applications were type evaluated in the uncompensated mode.

The Oregon Department of Agriculture asked the Sector if it is appropriate to equip vehicle-tank meters to operate with a temperature compensation feature and, if so, how to test temperature-compensated vehicle-tank meters.

Discussion: The Sector recalled that the NCWM Specifications and Tolerances Committee addressed this issue several times in the past. However, improvements in electronic automatic temperature compensating equipment make automatic temperature compensation (ATC) installation easier and less costly, and the new net/gross equipment does not require deactivation during test since both gross and net indications can be viewed.

Canada advised the Sector that the ATC program is voluntary in Canada. The Canadian House of Commons is currently reconsidering its support of ATC, based on the political climate. Several Sector members felt that, as weights and measures jurisdictions decide to permit ATC, it is only equitable if ATC is required on all vehicle-tank meters year-round or not at all. The Sector agreed that both the inspectors and consumers would benefit from an educational program on temperature-compensating systems. Tina Butcher (NIST) noted that the Office of Weights and Measures is concerned that education must be provided to both consumers and businesses to cover issues such as value comparison and the importance of compensation on a year-round basis. OWM believes that further work must be done to modify Handbooks 44 and 130 to address the new method of sale and to add specifications, tolerances, and test procedures to address the equipment.

Conclusion: The Sector agreed that ATC is the most equitable method to meter products. The Sector recognized the need for specifications, tolerances, and test procedures. However, if the NCWM Specifications and Tolerances Committee decides to address this issue, it should consider the challenges that Canada has encountered since 1972, when it established a voluntary ATC program.

21. Meeting Location for 2000 NTETC Measuring Sector Meeting

Background: Prior to 1997, the Measuring Sector met in conjunction with the Southern Weights and Measures Association (SWMA). In 1997, the Measuring Sector was invited to meet in conjunction with the Western Weights and Measures Association (WWMA) Annual Meeting. The Sector agreed that moving the meeting would allow the Western States that recently adopted NTEP requirements to participate in the NTEP process. At the 1997 and 1998 meetings, the Sector decided to hold its upcoming meetings with the WWMA again. During the 1999 NCWM Annual Meeting,

NTEP Committee

members of the Southern Weights and Measures Association (SWMA) met in the regional meeting session and adopted a motion to request the Measuring Sector meet in conjunction with the SWMA in 2000.

Discussion: The Technical Advisor provided the Sector with information about the tentative 2000 meeting sites. The WWMA meeting will be held in San Francisco, CA, and the SWMA takes place in Austin, TX. The primary difference between the locations is hotel costs; lodging costs in Austin are \$95 per night, and in San Francisco are \$147 per night.

The Sector noted that the accessibility to the meeting site and length of the meeting are important considerations. A Sector member proposed that the Measuring Sector consider meeting in conjunction with the Weighing Sector because many of the issues appear on both agendas. The Sector did not support the option of a joint sector meeting.

Conclusion: The Sector voted 10 in favor, 3 opposed, and 1 abstention to hold the 2000 NTETC Measuring Sector meeting in conjunction with the SWMA Annual Meeting in Austin, TX.

22. New Agenda Discussions - *The Next Edition of Publication 14*

Discussion: Several Sector members expressed concern about the delay in publishing the 1999 edition of Publication 14. One Sector member noted that the laboratories have no working document. Tina Butcher (NIST), NTEP Manager, advised the group that the Sector Meeting Summaries were distributed to all members and are a written reference for the latest changes to Publication 14. Laboratory representatives also participate in Sector meetings and are apprised of Sector decisions at those meetings.

Mrs. Butcher explained that the technical sections were on schedule; however, the NTEP reorganization discussions resulted in delays in updates to other portions of the document. In July, the NCWM agreed that the technical sections could be published; however, that decision coincided closely with the NCWM Annual Meeting and several other publication deadlines. Since several Sector meetings were planned shortly after the NCWM Annual Meeting, NIST-OWM suggested a new target date of 2000, which would permit sufficient time to include all of the Sectors' 1999 decisions in the latest edition of Publication 14.

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Measuring Sector
Meeting Participants
September 24-25, 1999
Olympia, Washington**

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Appendix F

National Type Evaluation Technical Committee Weighing Sector October 4-6, 1999, Ottawa, Canada Meeting Summary

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Carry-Over Items

1. Double-Wide and Narrow Decks

Background: This item was first discussed briefly at the 1997 Sector meeting during the discussion of multiple weighing elements interfaced with a single indicator. An NTEP Laboratory asked if an existing vehicle scale certificate applies to an installation in which two scales are placed side by side to create a “double-wide” scale. The Sector asked the SMA Technical Committee to review the issue and develop test procedures for “double-wide” scales. At its 1998 meeting, the Weighing Sector reviewed a proposed test procedure from the SMA

Technical Committee and agreed that the laboratories should use it on an *ad hoc* basis. The Sector asked the laboratories to review the procedure, try the procedure if possible, and recommend changes if appropriate. The Ohio laboratory conducted an evaluation and recommended modifying the procedure. Dave Quinn (Fairbanks Scales) also expressed a desire to provide input. The Sector was asked to discuss the proposed changes at its 1999 meeting. (See Appendix A-1, 2, & 3)

Discussion: The Sector reviewed the recommendations and the proposed procedures. Dave Quinn (Fairbanks Scales) stated that applying a Concentrated Load Capacity (CLC) rating for a “double-wide” scale is not appropriate. He feels the Handbook 44 definition for CLC is based on a 4 ft long and 5 ft wide loading pattern, which is the loading pattern for the tandem axle of a typical highway vehicle. Mr. Quinn also noted that assigning a CLC to a “double-wide” scale that is twice the value of that for a single platform is not appropriate and testing in a pattern that is four feet in length and the width of two normal scale platforms is also not appropriate. The Sector generally agreed that the present Handbook 44 definition for CLC does not apply to “double-wide” scales.

Conclusion: The Sector asked the SMA Technical Committee to review the present Handbook 44 definition of CLC and, if necessary, submit a proposal that addresses the loading patterns on “double-wide” scales. The Technical Committee was also asked to propose appropriate NTEP test procedures for the loading patterns on “double-wide” scales. The Sector agreed to continue using *ad hoc* procedures for any applications received for an NTEP evaluation of a “double-wide” scale until the recommendations of the SMA Technical Committee are developed, reviewed and accepted by the Sector. Based on the recommendation of the SMA Technical Committee the Sector may determine that changes to Publications 14 are appropriate. Recommendations for changes to Handbook 44 must be submitted to the NCWM S&T Committee for adoption by the Conference.

2. Combination Vehicle/Railway Track Scales Minimum Test Load

Background: At its 1998 meeting, the Weighing Sector agreed to submit a proposal to the Specifications & Tolerances (S&T) Committee to add a note 20 to Handbook 44 Table S.6.3.a. The note requires that a combination vehicle/railway track scale be marked with both CLC and Section Capacity. The Sector noted that the minimum test load requirements in Publication 14 raise questions concerning the requirement for a combination vehicle/railway track scale. During an NTEP evaluation, vehicle scales are required to be tested to a minimum of 90 percent of CLC with known test weights. A strain load test is conducted to a minimum of 80 percent of nominal capacity. The minimum test load requirement in Publication 14 for railway track scales is 100 000 lb. If a vehicle scale submitted for NTEP evaluation has a nominal capacity of 200 000 lb with a CLC of 100 000 lb, the minimum load requirement would be 90 000 lb of known test weight. The strain load test requires a test load of at least 160 000 lb. If a railway track scale is submitted for NTEP evaluation with a nominal capacity of 400 000 lb and a section capacity of 200 000 lb, a minimum of 100 000 lb of known test weight is acceptable. The minimum strain load requirement is to place one end of the empty United States Department of Agriculture (USDA) Grain Inspection Service Packers and Stockyards Administration (GIPSA) test car on the scale and add 100 000 lb of known weight.

The Sector asked the Scale Manufacturers Association (SMA) to review the minimum amount of known test standards required in Publication 14 for the NTEP evaluation of a railway track scale. SMA submitted the following recommendation. The Sector was asked to discuss SMA’s recommendations at its October 1999 meeting.

SMA Recommendation:

The Committee adopted a recommendation to require 90 000 lb minimum of known test weights as shown in Publication 14, Digital Electronic Scales, Sections 66 and 67. The intent is to allow using a GIPSA test car to satisfy both railway and vehicle scale test requirements. The 5-ft wheel spacing of the GIPSA test car weight mover may need to suffice for the 4-ft test pattern and dual axle spacing for the vehicle scale CLC test. The 90 000 lb minimum test weight requirement would allow evaluating vehicle scales with CLC’s up to 100 000 lb. The 80 000 lb test weight would also meet the requirement in Section 1.5.3 of the AAR scale handbook for railway track scales. The GIPSA test car weight movers are capable of applying up to 100 000 lb of test weight on the rails in 10 000-lb increments. Ninety thousand pounds of these test weights are in the form of rectangular blocks of 10 000 lb each. The remaining 10 000 lb is the powered test weight mover.

Discussion: The Sector reviewed the SMA Technical Committee's proposal. The Sector generally agreed with the recommendation for testing the vehicle CLC on combination vehicle/railway track scales with a minimum test load of 90 000 lb. The Technical Committee's proposal did not address a change to the minimum test load requirement for railway track scales. The Sector generally agreed that a test load of 90 000 lb was not an appropriate minimum for all railway track scales, such as one submitted for NTEP evaluation with a capacity of 400 000 lb. Lou Cerny, representing the Association of American Railroads (AAR), indicated a concern that any change to the present requirement would require a change to the GIPSA test equipment. At present, it is not possible to add more test weights to the GIPSA test cart. Some railway track scales submitted for NTEP evaluation, are not long enough to allow strain load testing using the GIPSA test cart and a loaded rail car. A change to the GIPSA test equipment might depend on GIPSA's receiving additional funding.

Conclusion: The Sector agreed to adopt the 90 000-lb minimum test weight load for the evaluating CLC's on combination vehicle/railway track scales. Lou Cerny agreed to develop a recommendation for a minimum strain load requirement. He will contact AAR members, railroad track scale manufactures, and GIPSA for assistance and input. The Sector requested a report by April 1, 2000.

3. Weighing Elements and Indicators Not Permanently Attached Definition

Background: At its 1997 meeting, the Weighing Sector decided that a proposal should be submitted to the S&T Committee to change the headings of the 3rd and 4th columns of Table S.6.3.a. to read "Indicators with CC" and "Weighing and Load-Receiving Element with CC," respectively. At the 1998 NCWM Interim Meeting, the S&T Committee rejected the proposed language and suggested that the Weighing Sector make an alternative proposal. The S&T Committee was concerned that the proposed changes would eliminate marking requirements for non-permanently attached indicators in non-NTEP States. Moreover, the proposed change still did not address the concern over inconsistency in applying the requirement during NTEP evaluations. At its 1998 meeting, the Weighing Sector discussed marking requirements for elements that are not permanently attached. The Sector recognized a need to clarify or define elements that are to be "not permanently attached." The Sector asked the SMA Technical Committee and the laboratories to develop a recommendation for this meeting. SMA submitted the following proposal. The NTEP Laboratories met on October 3, 1999, and offered an alternative proposal requiring that all indicators be either permanently wired or have connecting plugs sealed. The Sector was asked to review the recommendations.

SMA Recommendation:

Clarify meaning of "Indicating elements not permanently attached to the weighing element."

The Committee adopted the position to recommend that "Indicating elements not permanently attached to the weighing element," defines those which have their own Certificates of Conformance. Rationale: This indicating element marking situation is very similar to that of load cells with their own Certificates of Conformance. Load cells with CCs are already listed in Handbook 44 Table S.6.3.a for the purpose of specifying marking requirements.

Discussion: The Sector reviewed the recommendations of the SMA Technical Committee and the NTEP Laboratories and agreed that "permanently attached" is difficult to define. Examples of questionable devices include indicators mounted on a pedestal attached to the load receiving element or indicators bolted directly to the load receiver. The Sector also discussed indicators and load-receiving elements that have electronic identification that allows the indicator to communicate with the load-receiving element only if the two elements were calibrated together. The Sector also discussed the concern of non-NTEP states. The number of non-NTEP states has decreased since the Sector's last meeting, however the Sector agreed the concern is still valid. The Sector agreed that manufacturers can determine the status of their devices at the time of evaluation and the NTEP Laboratory can test accordingly. Restrictions may be listed on the CC based on the device submitted for NTEP certification.

Conclusion: The Sector agreed to forward the following proposal to the S&T Committee to consider:

Proposal: Modify Handbook 44 Scales Code Table S.6.3.a. as follows:

**Table S.6.3.a.
Marking Requirements**

Weighing Equipment To be Marked With	Weighing, load-receiving, and indicating element in same housing	Indicating element not in same housing or not permanently attached to weighing and load receiving Element ¹	Weighing and load-receiving element not in same housing or not permanently attached to indicating element ¹	Load cell with CC (11)	Other equipment Or device (10)
Section Capacity (14)(20)		X	X		

¹“permanently attached” may be hard wired or secured together with a physical or electronic seal.

4. Marking of CLC on Indicators Not Permanently Attached

Background: At its 1998 meeting, the Weighing Sector discussed marking requirements for Electronic Cash Registers (ECR) interfaced with scales. The Sector heard comments indicating that the requirement for marking the CLC on an indicator that is not permanently attached should be eliminated. The Sector referred the item to the SMA Technical Committee for study and recommendations. The committee submitted the following recommendation for review. The Sector was asked to review the SMA recommendations.

SMA Recommendation:

The Committee adopted a recommendation to retain the current requirement to mark the CLC on indicators not permanently attached to the weighing element.

Discussion/ Conclusion: The SMA recommendation recognized that for some systems, such as vehicle scales, the marking of CLC on the indicator is appropriate and necessary. At the time of manufacture the final application for the indicator may not be known. Marking of CLC on the indicator may be accomplished at the time of installation. The Sector discussed the SMA Technical Committee’s recommendation not to change the present Handbook 44 Table S.6.3.a. requirement for the marking of CLC on an indicating element not permanently attached to a weighing and load receiving element.

The Sector agreed with the SMA Technical Committee recommendation. No further action is required.

5. Point-Of-Sale (POS) Receipt Format

Background: At its 1998 meeting, the Weighing Sector briefly discussed the format for POS receipts. The Sector reviewed the format of several examples of supermarket receipts. That review resulted in the opinion that Publication 14 should contain some guidelines for formatting ECR receipts to ensure consistent interpretation among the laboratories. The Sector agreed to review the checklist to determine what, if any, changes are needed in Publication 14 to give the laboratories and manufacturers clear requirements for printed receipts. If needed, the Sector agreed to add examples to the checklist. Dennis Krueger (NCR) agreed to use the Food Marketing Institute (FMI) for assistance in developing criteria for receipts. Mr. Krueger thought that the FMI might form a work group to develop a recommendation. Mr. Krueger was asked to update the group on progress made to date.

Discussion: Dennis Krueger informed the Sector that he has been unable to work on this issue, but he has recently contacted FMI. FMI is interested in working with the Sector to develop recommendations for a receipt

format for POS systems. Some members of the Sector expressed an opinion that this issue belongs with the L&R Committee. Most format issues are related to providing information to the consumer that is clear, complete, and does not facilitate fraud. It was pointed out that even if some of the issues are the L&R Committee's responsibility, this Sector and the S&T Committee should discuss and resolve any device related issues.

Conclusion: Dennis Krueger volunteered to continue to work on this issue. He agreed to provide a proposal by April 1, 2000, for the entire Sector to consider. The Sector also agreed it is appropriate for the technical advisor to inform the L&R technical advisor of the discussions and provide input to the L&R Committee on technical issues if the L&R Committee begins to develop a proposal for a receipt format.

6. Calibration Period for Test Weights Used for NTEP Evaluations

Background: The required calibration period for "Certified Test Weights" differs among the various States. The NTEP Laboratories are sometimes uncertain if the test weights available for NTEP field evaluations have a "calibration certificate" that is consistent with local requirements or if calibration is overdue. There are also questions concerning an acceptable time period between calibrations. At its 1998 meeting, the Sector asked the NTEP Laboratories to develop a proposal for calibration requirements for test weights used during an NTEP evaluation. Dick Suiter (NIST), Technical Advisor, will update the Sector on the status of the proposal.

Discussion: Dick Suiter updated the group on work that Georgia Harris (NIST) is doing with the state metrology laboratories to develop standards for calibration periods. Some jurisdictions use an annual calibration requirement. Some jurisdictions require 2- and 3-year intervals. At least two jurisdictions set calibration intervals for each standard based on a history developed for that standard.

Conclusion: The Sector agreed that consistent requirements are needed for use during NTEP evaluations. The Sector also agreed that until a calibration interval recommendation is presented by Georgia Harris and the State metrology laboratories, the NTEP Laboratories should continue to apply the requirements of the jurisdiction where an evaluation is being conducted.

New Items

7. Modular Scale Section Connection Points

Source: NIST/OWM

Background: NTEP was asked if there is a metrological or structural difference between devices with modules that are welded together and modules that are bolted together. Specifically, NTEP was asked, "If a device was evaluated with welded joints and received a CC, could the same device with bolted joints be covered by the same CC?"

Recommendation: The Sector was asked to discuss the issue and recommend a policy to be added to Publication 14 to cover future evaluations.

Discussion: The Sector discussed the issue with varying opinions whether or not the type of connection is metrologically significant. The Sector agreed that a bigger question is what constitutes a modular design. The Sector also discussed the location of load cells in modular designs as presented in Agenda Item 8. The Sector agreed that manufacturers are responsible for reporting design changes from their original submission for evaluation; however, no clear decision was made concerning the metrological significance of the connection or the placement of load cells.

Conclusion: The Sector agreed that the SMA Technical Committee should be asked to review this item and propose a definition for "modular designs." The Technical Committee is also asked to provide guidance about the metrological significance of the types of connections. The Sector will consider the SMA recommendation at its next meeting.

8. Load Cell Placement in Modular Scales

Source: NIST/OWM

Background: NTEP was asked if the placement of load cells under the connection point for modules is metrologically or structurally significant. Some designs place the cells directly under the joint. Other designs have displace the cells to one side of the joint.

Recommendation: The Sector was asked to consider the issue and address the following questions: Should the location of the cells be noted on the CC? Should the test procedures be modified to consider cell placement?

Discussion: This item was discussed along with item 7 above.

Conclusion: The Sector agreed to ask the SMA Technical Committee to address this item along with item 7 dealing with the metrological significance of different types of connections (welded vs bolted) for modular scales. The Technical Committee was also asked to consider if the position of the load cells relative to the module connection point is metrologically significant. The Sector will consider the SMA recommendation at its next meeting.

9. Models to be Submitted for Testing When a Digital Option is Added to a CC for Cells Evaluated as an Analog Design

Source: NIST/OWM

Background: NTEP received an application to add the option of digital output to a CC for a family of load cells that were previously evaluated with analog output. NTEP, in consultation with the NIST Force Group, made an *ad hoc* decision to consider this as the relocation of the A/D conversion. NTEP and the NIST Force Group also determined which cells the manufacturer needed to submit for test based on previous test data and input from technical experts.

Recommendation: The Sector was asked to consider this item for future applications and provide guidance concerning the appropriate level of testing.

Discussion/Conclusion: The Sector discussed the appropriateness of adding a digital option to a family of load cells covered by a single CC with a limited number of additional cells submitted for testing. The Sector generally agreed that if the A/D conversion was located in an add-on black box, located externally from the load cell, the black box would require full NTEP evaluation and a separate CC. If the A/D conversion is an internal component of the load cell, the option could be added to an existing certificate with a limited number of additional cells submitted for testing.

The Sector agreed that the addition of a digital option for a family of load cells covered by a CC is acceptable. The Sector also agreed that the testing of only one cell is appropriate if the A/D conversion board is the same and is located in the same way for all cells in the family. The Sector also agreed that if the digital load cell submitted for testing performed better than the analog load cells tested for original CC, the manufacturer could not request to have the v_{min} lowered or the n_{max} increased without full testing. The Sector also agreed that additional language should be added to Section D, 3, page 5-13 to clarify this position for future applications.

10. Marking of Enter and Zero Keys on Weighing System Key Pads

Source: Maryland NTEP Laboratory

Background: During the evaluation of a computing scale, the zero key for the scale was marked with the letter "Z" and the enter key was marked with the " 5 " symbol.

Recommendation: The Sector was asked to provide input concerning the acceptability of these markings.

Discussion/Conclusion: The Sector generally agreed that the " 5 " symbol is commonly used for the enter key and should be accepted. The use of "Z" alone to designate the zero key is not clear unless it is defined elsewhere on the device.

The Sector agreed that the “ 5 ” symbol is acceptable and should be added to the list of acceptable markings in Publication 14. A notation should be added to Publication 14 stating that using the letter “Z” to designate the zero key is acceptable only if the term is defined on the device.

11. Ranges Covered on the CC for a Railway Track Scale Based on the Device Evaluated

Source: NIST/OWM

Background: Section B.5., Digital Electronic Scales, of Publication 14 gives a range of parameters which can be covered on a CC for weighing elements greater than 30 000 lb capacity based on the model evaluated. If a vehicle scale with a nominal capacity of 160 000 lb is evaluated, the manufacturer may request the CC include capacities up to 216 000 lb. In the case of railway track scales, 135 percent of the capacity evaluated may be a substantial change. For example, a scale submitted with a capacity of 400 000 lb could be used to cover devices with a capacity up to 540 000 lb.

Recommendation: The Sector should consider whether or not applying this criterion to railway track scales, or placing a limit on the allowable amount of increase, is appropriate.

Discussion/ Conclusion: Some members of the Sector suggested that the 135 percent criterion is as appropriate for railway track scale as it is for vehicle scales. Railway track scales are designed for heavier loads than vehicle scales. A suggestion was made and the Sector agreed to re-address this issue once the minimum strain load requirement for a railway track scale evaluation is established.

The Sector agreed to re-address this issue when the minimum strain load requirement for NTEP evaluation of a railway track scale is resolved.

12. Application of Modular Criteria to Combination Vehicle/Railway Track Scales

Source: NIST/OWM

Background: Section B.6., Digital Electronic Scales, of Publication 14 gives range parameters for modular load-cell vehicle scales. Manufacturers of combination vehicle/railway track scales submitted for NTEP evaluation have requested that the CC cover the same range of parameters. If those manufacturers verify that the device submitted is a modular design, and the subsequent NTEP evaluation included the test criteria for modular designs, it seems appropriate to apply the same criteria to [modular] combination vehicle/railway track scales and railway track scales.

Recommendation: Remove the word “vehicle” from the title and change all references to “CLC” to “CLC or Section Capacity,” thus making the paragraphs applicable to all modular scales.

Discussion/Conclusion: The Sector discussed the appropriateness of applying modular criteria to railway track scales. The Sector generally agreed that the definition of modular designs (as outlined in Agenda Items 7 & 8) should be resolved before this item is decided.

The Sector agreed to revisit this item at its next meeting after the SMA Technical Committee submits a proposal to clarify the definition of a modular scale.

13. CLC on Livestock Scales

Source: NIST/OWM

Background: Handbook 44 requires that livestock scales be marked with a CLC. It may be appropriate to test a livestock scale to see how it performs with a load concentrated on the platform. It also seems appropriate to require a marking which limits concentrated loads.

The Handbook 44 definition for CLC only explains how the term CLC applies to a vehicle scale. Handbook 44 does not give any guidance about how the term CLC applies to a livestock scales. When the CLC definition was developed many livestock scales were derived from a vehicle scale design. Now some NTEP applications are exclusively for the weighing of livestock, such as livestock ring scales, animal scales, or portable livestock scales.

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In use, the loads on a livestock scale are randomly distributed depending on the number of animals being weighed. A full load will generally be distributed over the entire platform. If only a small number of animals are being weighed, the animals may crowd into one corner. When a vehicle scale is in use, the loads typically follow a wheel spread of eight feet wide and depend more on the vehicle's footprint.

The basis for CLC on a vehicle scale was derived from the highway bridge formula which allows a tandem axle to be loaded to a maximum of 34 000 lb. For a livestock scale, the USDA Packers and Stockyards Administration requires that the maximum load that can be placed on the platform be based on 110 lb per square foot of platform area.

Recommendation: The Sector should consider if the requirement for marking CLC on a livestock scale is appropriate, or if CLC should be redefined when applied to livestock scales.

Discussion/Conclusion: The Sector generally agreed that the CLC test criteria currently in Publication 14 should apply to livestock scales. However, the Sector recognized that the discussions during the development of the CLC definition centered primarily on vehicle scales. The Sector agreed that Handbook 44 and Publication 14 should be changed to eliminate the requirement for marking and testing of CLC on livestock scales. The Sector did not develop a specific proposal at this meeting. The Sector agreed that will develop a proposal, with input from GIPSA, to replace the Handbook 44 requirements for marking CLC on livestock scales with concentrated load marking and test criteria based on the P&S loading formula of platform area times 110 lb per square foot. It will also develop a proposal, with input from GIPSA, for test criteria to be added to Publication 14 for livestock scales based on the proposed changes to Handbook 44.

The Sector agreed to revisit this item at its next meeting.

14. Minimum Height for Weight Indication on Video Display Screens Used as Indicators

Source: Maryland NTEP Laboratory

Background: The Maryland NTEP Laboratory evaluated a software-based ECR in which the primary weight display was incorporated into a corner of the Cathode Ray Tube (CRT) display screen. The laboratory was concerned about the height of the characters. The total display area was approximately 12 mm high. The character size of the weight indication was approximately 4 mm high. The laboratory felt that the height of the letters did not provide clear and legible indication of the weight display. While Handbook 44 and Publication 14 have general requirements about the visibility and legibility of indications, neither has specific requirements for the character size for indications for scales. OIML R76-1 Nonautomatic Weighing Instruments has a minimum height requirement for display characters of 10 mm ∇ 0.5 mm.

At its last meeting, the NTEP Laboratories agreed to submit a proposal for a minimum height requirement of 10 mm ∇ 0.5 mm. The laboratories believe that requiring a specific minimum height (as is currently done in the Grain Moisture Code of Handbook 44) will help to ensure consistent application of the requirements. Andrea Buie (Maryland) and Steve Cook (California) agreed to draft a proposal to present to the Weighing Sector. That proposal is included in the following recommendation.

Recommendation: The Sector was asked to consider the following proposal for addition to NIST Handbook 44. If the Sector agrees with the proposal, it will be forwarded to the S&T Committee.

S.1.1.1. Digital Indicating Elements. –

- (a) A digital zero indication shall represent a balance conditions that is within ∇ 1/2 the value of the scale division.
- (b) *A digital indicating device shall either automatically maintain a "center-of-zero" condition to ∇ 1/4 scale division or less, or have an auxiliary or supplemental "center-of-zero" indicator that defines a zero-balance condition to ∇ 1/4 of a scale division or less. [Nonretroactive as of January 1, 1993.] (Amended 1992)*

Primary weight indications on both the operator and customer side shall be clear, of the same dimension, and at least 10 mm in height. [Nonretroactive as of January 1, 200X]

Discussion: Several members stated that a minimum height requirement should apply only to devices used in direct sales and only on the customer side. Other members indicated any proposal should be compatible with OIML requirements. It was noted that the OIML minimum size requirement of “10 mm ∇ 0.5 mm” may change to “9.5 mm on the customer side.” It was also generally agreed that all information displayed by ECR’s other than measuring units should be exempt from minimum size requirements. When an ECR is used the customer is provided a receipt. The Sector agreed that a General Code requirement would be more appropriate than a specific code requirement.

Conclusion: The Sector agreed that the following proposal should be forwarded to the S&T Committee for additional language to be added to Handbook 44, General Code, Paragraph G-S.5.2.3.

Modify G-S.5.2.3. as follows:

G-S.5.2.3. Size and Character

- (a) In any series of graduation, indications, or recorded representations, corresponding graduations and units shall be uniform in size and character. Graduations, indications, or recorded representations that are subordinate to or of a lesser value than others with which they are associated shall be appropriately portrayed or designated.
[Made retroactive as of January 1, 1975.]
- (b) Except for ECR’s on direct sale digital devices that display primary indications the numerical figures of the primary indications on the customer side must be at least 9.5mm in height. [Nonretroactive as of January 1, 200X.]
- (c) For ECR’s the display of the measurement units must be at least 9.5mm in height. [Nonretroactive as of January 1, 200X.]

15. Scales to be Submitted for Evaluation When the Range of Capacities is Narrow

Source: Maryland NTEP Laboratory

Background: At its 1997 meeting, the Weighing Sector decided that the general policy of applying 4:1 from extremes of the family capacity and 10:1 overall ratios was acceptable for defining which device(s) must be submitted for evaluation in order to cover a family of scales with a capacity of less than 30 000 lb. At its 1998 meeting, the Sector re-affirmed the 1997 decision and suggested the laboratories continue to monitor the issue. The Maryland NTEP Laboratory is concerned with the policy of evaluating only a mid-range device when the range of capacities is narrow. They have found several instances where subsequent submissions at a higher or lower capacity have failed environmental testing. At the last NTEP Laboratory meeting, the Maryland laboratory agreed to supply data supporting their concern. The Sector is asked to review that data and decide if the current policy should be changed.

Series Tests (1992-1999)

If the current policy was utilized during the period of 1992 - 1999, 8 out of 12 NTEP Certificates of Conformance issued from this laboratory would have contained a device that did not comply with NIST Handbook 44					
Evaluation Number	Capacity Range	Pass/ Fail(Tolerance)			Comments
		Low	Mid	High	
1	15 to 30 lb	P	n/a	F	Device failed at 30 x 0.1 lb. Capacity reduced to 15 x 0.1 lb
2	1K to 10K	F	P	P	1000 x 0.5, 2000 x 1, 4000 x 2, 10000 x 5
3	150 lb to 300 lb	P	n/a	F	Failed influence factors test
4	250 lb to 1000 lb	F	P	P	250 x 0.1, 500 x 0.2, 1000 x 0.5
5	30 lb to 300 lb	P	n/a	P	30 x 0.01, 60 x 0.02, 150 x 0.05, 300 x 0.1
6	150 lb to 200 lb	n/a	*P	F	*Multi-Interval and single range devices. Largest Capacity and Smallest d tested
7	1K to 5K	F	n/a	P	5000 d
8	1K to 10 K	P	n/a	P	
9	25 lb to 500 lb	P	P	P	
10	15K to 25K	P	n/a	F	Originally tested as 25K. Failed at 25K and 20K. Passed at 15K
11	15 lb to 30 lb	F	n/a	P	15 x 0.01 and 30 x 0.01, 15 lb failed influence factors test.
12	20 lb to 40 lb	P	n/a	P	
Totals	Failed	4	0	4	
	Passed	7	4	8	

Eight of the twelve (67%) evaluations failed because devices on the low or high end of the capacity range failed to meet accuracy.

Discussion: The Sector reviewed the above data from the Maryland Laboratory as well as additional information from other NTEP Laboratories. The laboratories found problems when testing only a mid-range device for a range of capacities meeting the over-all range of 10:1 and a range of 4:1 from either extreme. The Sector agreed that the range of capacities to be covered by the evaluation of a mid-range device should be reduced.

Conclusion: The Sector agreed to modify the footnote on page 1-9 of Publication 14, Digital Electronic Scales to stipulate that a narrow range must be less than 2:1, otherwise both the highest and lowest capacity must be tested. This criterion will also apply to subsets of the entire range of a family to be covered by one CC.

Modify the footnote on page 1-9 of Publication 14 as follows:

¹If the range of capacities is quite narrow (e.g., 50 lb, 110 lb, and 200 lb) and is a ratio of less than 2:1, it may be that only a device near mid-range need be submitted. If the range of capacities is extremely wide (e.g., 10 lb to 10 000 lb), it may be necessary that a device near mid-range also be submitted.

Example: For a family of scales with a range of capacities from 500 lb to 999 lb the manufacturer could submit one model with a capacity of 750 lb. If the 750-lb model successfully passed full evaluation, the entire family could be covered by the CC. If the range for a family included capacities from 10 lb to 100 lb, the manufacturer would be required to submit three devices. The devices required to be submitted for evaluation would include the highest and lowest capacity as well as one near mid-range.

16. Marking Requirements for Hardware of Software Based Systems

Source: Maryland NTEP Laboratory & NIST

Background: NIST/OWM and the NTEP Laboratories have been concerned about marking requirements for the hardware of software-based weighing systems. One of the NTEP Laboratories evaluated an ECR software program with a remote primary weight indicator feature. The feature allows any off-the-shelf monitor to be used as the primary weight display. The company marked the required identification information on tamper evident labels. These labels will be placed on the PC's monitor during software installation. If the monitor malfunctions and is replaced, the display is still the same, but its permanent markings are gone. If the user changes programs, the markings are permanent, but the display may function differently. The evaluator believes that the best way to mark these devices is on the CRT screen real time as part of the display. At the last NTEP meeting, the laboratories were asked to discuss the issue with the goal of presenting a proposal to the Weighing Sector. Steve Cook and Andrea Buie agreed to develop a proposal for submittal to the Sector.

Recommendation: The Sector was asked to consider the following proposal for addition to NIST Handbook 44. If the Sector agrees, the proposal will be forwarded to the S&T Committee.

G-S.1. Identification. – All equipment, except weights and separate parts necessary to the measurement process but not having any metrological effect, and software-based weighing and measuring systems that are capable of operating on equipment not provided by the manufacturer or distributor shall be clearly and permanently marked for the purpose of identification with the following information:

- (a) the name, initials, or trademark of the manufacturer or distributor;
- (b) a model designation that positively identifies the pattern or design of the device;
- (c) *except for equipment with no moving or electronic component parts, a nonrepetitive serial number; and [Nonretroactive as of January 1, 1968]*
- (d) *the serial number shall be prefaced by words, an abbreviation, or symbol that clearly identifies the number as the required serial number. [Nonretroactive as of January 1, 1986]*
- (e) Weighing and measuring systems that are capable of operating on equipment not provided by the manufacturer shall have the required identification continuously displayed on the primary indicating element during normal usage.

Discussion: The Sector discussed this item at length. Most members agreed that indicators must be marked with the information required in G-S.1. Problems arise when the indicator is a CRT or other type of Personal Computer (PC) monitor manufactured by a company other than the manufacturer holding the CC for the system. The questions that were discussed include: Which manufacturer's name(s) should be on the monitor? Are the markings permanent? Who is responsible for the required markings if the monitor is changed? Is it acceptable to display the required markings on the monitor screen? If the markings are displayed on the screen, must they be available at all times? For systems that are software based, is a version number more meaningful than a serial number? Does this only apply to POS systems? Some members felt that marking the CC number on the indicator would solve the problem. Another member pointed out that two completely different versions may have the same certificate number. The hardware may look identical; however, the operation and features may not be the same. One member pointed out that a real-time screen display of marking information would eventually burn that portion of the screen. There was general agreement that many of the questions also apply to G-S.6. and S.6.3.

Conclusion: The Sector did not reach consensus on this item. The Sector agreed that this is an S&T Committee issue. If it is added to the S&T Committee agenda, members should provide input and comments directly to the S&T Committee.

17. Standard Features and Options to be Listed on a Certificate of Conformance (CC)

Source: Maryland NTEP Laboratory

Background: The Maryland laboratory is concerned that some CCs list nonmetrological features and options that have not been evaluated by an NTEP Laboratory. At the last NTEP Laboratory meeting, the laboratories generally agreed that if features and options were not evaluated they should not be listed as standard features and options. Andrea Buie agreed to draft a proposal for the Weighing Sector.

Proposal: Add the following language to Publication 14, NTEP Technical Policy for Scales, Section A. & B.

A. Models to be Submitted for Evaluation

A type is a model or models of the same design, as defined in the NTEP Policy and Procedures. A complete list and description of all models of a type to be included on the CC shall be submitted with the request for type evaluation. All options and features to be included on the CC must be submitted for evaluation. If the CC is to include more than one model of the same type, the submitter shall contact the evaluation agency to determine which model or models will be evaluated. A CC will be amended when new models of the same type meeting the specified criteria are added by the manufacturer. Nonmetrological features may be listed on a CC, but only if the feature has been tested and operates properly.

B. CC Parameters

The following guidelines apply:

1. Indicating Element

A CC will apply to all models that have:

- a. equivalent hardware and software;
- b. the same or smaller number of scale divisions; and
- c. subsets of standard options and features of the equipment evaluated.

Metrological features not recognized by Handbook 44, but capable of being used as the basis for commercial transactions, shall be capable of being disabled before the device can receive an NTEP CC.

The following units of measure are not recognized in Handbook 44: tael, tical, & momme. Listing these units on a CC would appear to indicate that they meet the applicable requirements of Handbook 44 and are acceptable for use in commercial applications.

Discussion: The Sector generally agreed that the standard features and options listed on page one of a CC should be metrological functions that were evaluated. Listing additional units of measure that are not used in the United States can benefit the manufacturer of the device. Some devices submitted for NTEP are also sold in other countries. In some of those countries, the NTEP CC may help allow the manufacturer to distribute the device. During NTEP evaluation units of measure which are not recognized in Handbook 44 may not be subjected to full evaluation. However, the evaluation laboratory may check at several points for proper conversion from the units of measure being evaluated to other units of measure to be listed on the CC. There may also be exceptions for non-commercial features. An example would be an NTEP scale with a non-commercial counting feature that may be listed on the certificate. Some members were also concerned about devices other than scales, such as grain analyzers that will perform non-commercial measurements for starch and oil content. Some members thought that features that had not been evaluated should be listed on page two of the certificate.

Conclusion: The Sector agreed to carry this item forward to its next meeting to allow for further development of the issue. There was concern that all types of devices should be considered. Other Sectors may need to provide input.

18 (a). Re-evaluating Test Data to Cover Smaller “d” and Larger “n”

Source: Maryland NTEP Laboratory

Background: At the last NTEP Laboratory meeting, the Maryland laboratory expressed concern with the practice of re-analyzing data from the evaluation of a scale when a manufacturer requests a smaller division size and a larger number of divisions on a CC than the original request. This practice is similar to the re-analyzing of load cell test data to allow the CC to list a lower v_{min} than stated on the application for a certificate. For some time NTEP has allowed load cell manufacturers to request the NIST Force Group to re-analyze load cell data. The laboratories agreed that criteria and procedures should be added to Publication 14 stipulating when and how this practice is acceptable for complete devices.

Recommendation: The Sector should consider the following proposal. If the Sector agrees, the proposed language will be added to Section 58, Digital Scales of Publication 14.

Proposed language for addition to Publication 14, Section 58, Digital Electronic Scales

- 58.19 If the Device Under Test (DUT) fails to meet tolerance requirements while conducting steps 58.13 and 58.17, the manufacturer may have the option to have the test data reanalyzed for a larger “ e_{min} ” and smaller “ d_{max} ”. Re-analyzing data is only appropriate if the data was collected using error weights or expanded display resolution to a resolution of one tenth of the specified “ e_{min} ”.
- 58.20 If the DUT fails to meet tolerance requirements while conducting steps 58.13 and 58.17, the manufacturer has the option of specifying a smaller temperature range. If the DUT failed at only the original specified

minimum or maximum, only the new specified minimum or maximum must be tested, the DUT is not required to be re-tested over the entire new specified temperature range.

- 58.21 Before manufacturers request a smaller “ e_{\min} ” and/or larger “ n_{\max} ” based on the performance during an evaluation, they must submit documentation illustrating the changes made to the device or the manufacturing process to improve the metrological performance of the device. NTEP reserves the right to require the submission of additional devices for temperature testing.

Discussion: Most Sector members agreed that device manufacturers should know how well their device will perform at the time they apply for an evaluation. If the device submitted for evaluation happens to perform better than anticipated, a manufacturer should not be allowed to request a lower v_{\min} or higher n_{\max} than on the original application. Canada would require manufacturers to submit another device if they wanted to increase “ n ” or lower the value of “ e .” The majority of the Sector agreed with proposed paragraphs 58.19 and 58.20. The Sector agreed that the last sentence of 58.21 should require that additional devices be tested.

Conclusion: The Sector approved the proposed sections 58.19 and 58.20 as written. The Sector approved paragraph 58.21 as follows.

- 58.21 Before manufacturers requests a smaller “ e_{\min} ” and/or larger “ n_{\max} ”, based on the performance during an evaluation, they must submit documentation illustrating the changes made to the device or the manufacturing process, to improve the meterological performance of the device. NTEP ~~reserves the right to~~ will require the submission of additional devices for temperature testing.

18 (b). Re-evaluation of Test Data for Load Cells to Cover Smaller “ v_{\min} ” or Larger “ n ”

Source: NIST/OWM

Background: When manufacturers submit a load cell for NTEP testing, they receive a copy of the test data. Sometimes, based on the test results, the manufacturer requests that the application be modified and the test data re-analyzed for a smaller “ v_{\min} ” and a larger “ n_{\max} .”

Recommendation: The Sector should revisit this practice and consider the following proposal. If the Sector agrees, the proposed language will be added to Section K, Load Cells, of Publication 14.

Proposal for addition to Publication 14, Section K, Load Cells.

IV. Re-analyzing performance data

When a load cell is submitted for NTEP evaluation, testing is conducted to determine performance over the range of temperature specified by the manufacturer. If the collected data indicates that the cell would meet the performance requirements for a smaller “ v_{\min} ” and/or a larger “ n_{\max} ” than that specified on the NTEP application, the manufacturer may request that a CC be issued using the smaller “ v_{\min} ” and/or larger “ n_{\max} .” When requesting a smaller “ v_{\min} ” and/or a larger “ n_{\max} ”, documentation of changes made to the cell or the manufacturing process to improve the metrological performance must be submitted. NTEP reserves the right to require the submission of additional cells for testing.

Discussion: The Sector agreed that load cells should be treated similarly to complete devices as discussed in the previous item. The same general reasons apply. The Sector agreed with the proposed Section IV, with the exception that additional testing of at least one additional cell will be required.

Conclusion: The Sector agreed to add Section IV. as follows:

IV. Re-analyzing performance data

When a load cell is submitted for NTEP evaluation, testing is conducted to determine performance over the range of temperature specified by the manufacturer. If the collected data indicates that the cell would meet the performance requirements for a smaller “ v_{\min} ” and/or a larger “ n_{\max} ” than that specified on the NTEP application, the manufacturer may request that a CC be issued using the smaller “ v_{\min} ” and/or larger “ n_{\max} .” When requesting a smaller “ v_{\min} ” and/or a larger “ n_{\max} ”, the manufacturer must submit documentation of changes made to the cell or

the manufacturing process to improve the metrological performance. NTEP will require the submission of at least one additional cell for testing.

19. Review of AWS Issues by This Sector

Source: NIST/OWM

Background: The Automatic Weighing System (AWS) Work Group completed its assignment and will no longer meet. At its 1996 meeting the Weighing Sector agreed that it is the logical forum for reviewing any new or ongoing issues related to the AWS Checklist in Publication 14 or for technical assistance on issues related to the tentative AWS Code in Handbook 44.

Conclusion: This item was presented as a reminder to the Weighing Sector that AWS issues are to be discussed by this group. No Sector action was required for this item.

20. Sealable Parameters for AWS Systems

Source: Maryland NTEP Laboratory

Background: The AWS Work Group did not address multiple belt speeds in its work to develop the AWS Tentative Code. Several multi-interval weigh-labelers with variable belt speeds have been evaluated by NTEP. The Maryland NTEP Laboratory evaluated a device with three weight ranges and three speeds. In this particular device, speed was programmed into the price look-up (PLU) code and could be changed through the user menu. If a package travels across the scale at a speed that does not allow the system to capture a weight, the device will not print a label.

At the last NTEP Laboratory meeting, not all the laboratories agreed that belt speed should be sealed however, the laboratories agreed that a table of sealable parameters should be added to the AWS Checklist of Publication 14. The laboratories also agreed that the Weighing Sector should consider whether belt speed needed to be a sealable parameter. Andrea Buie (Maryland) and Bill Fishman (New York) agreed to draft a proposal for the Weighing Sector's consideration. The Sector was asked to review that proposal for addition to Publication 14.

Discussion: At the meeting, Andrea Buie presented the following proposal for discussion:

Add the following to the Scales Checklist of Publication 14

Sealable Parameters for AWS

Option 1:

Add belt speed to sealable parameters for weigh-labelers.

Option 2:

12. Code Reference: G-S.5.1., G-S.5.2.2., and S.1.2.

12.1 If the system is capable of operating above its rated capacity, it shall be equipped with a means to provide an audio or visual alarm when

12.1.1 The belt speed exceeds the rated scale belt speed. **Yes ~ No ~ NA ~**

12.1.2 A package exceeds the weight range for the operating belt speed (applicable to variable belt speed systems). **Yes ~ No ~ NA ~**

12.2 The alarm is located so it will be noticed during normal scale operation. **Yes ~ No ~ NA ~**

12.3 Access to the parameters for setting the alarm limits shall be sealed. **Yes ~ No ~ NA ~**

The scale belt speed alarm is:

both audio and visual _____ audio _____ visual _____

12.4 If a package is weighed at a belt speed above the rated speed of its weight range, the system must:

12.4.1 not issue a label , or **Yes ~ No ~ NA~**

12.4.2 provide a clear indication on the printed label that the weight is invalid. **Yes ~ No ~ NA ~**

The Sector discussed the S&R laboratories’ proposal. One member indicated that only the maximum speed and maximum weight should be require for marking and evaluation. The Sector was generally opposed to Option 1. Belt speed should be selectable by the user similar to tare. On many systems, the user will adjust the belt speed relative to the size of the packages. During evaluation, NTEP should verify accuracy of the device at a maximum speed and weight. There may be multiple speed ranges on some devices related to the maximum weight capacity for that range.

The Sector generally agreed with option 2. It was noted that “equipped with a means to provide an alarm” may not require an alarm to actually be installed. The Sector agreed that 12.1 should be changed from “shall be equipped with a means to provide” to “shall provide.” The Sector also agreed that a manufacturer should have the option of indicating invalid weights either on the printed label or on the device.

Conclusion: The Sector agreed that option 2 to should be modified and added to Publication 14.

12. Code Reference: G-S.5.1., G-S.5.2.2., and S.1.2.

12.1 If the system is capable of operating above its rated capacity, it shall provide an audio or visual alarm when

12.1.1 The belt speed exceeds the rated scale belt speed. **Yes ~ No ~ NA ~**

12.1.2 A package exceeds the weight range for the operating belt speed (applicable to variable belt speed systems). **Yes ~ No ~ NA ~**

12.2 The alarm is located so it will be noticed during normal scale operation. **Yes ~ No ~ NA ~**

12.3 Access to the parameters for setting the alarm limits shall be sealed. **Yes ~ No ~ NA ~**

The scale belt speed alarm is:

both audio and visual _____ audio only _____ visual only _____

12.4 If a package is weighed at a belt speed above the rated speed of its weight range, the system must:

12.4.1 not issue a label, or **Yes ~ No ~ NA ~**

12.4.2 provide a clear indication on the device or on the printed label that the weight is invalid. **Yes ~ No ~ NA ~**

21. Procedure for Determining Belt Speed for an AWS System

Source: Maryland NTEP Laboratory

Background: At the last NTEP Laboratory meeting, the laboratories agreed that a procedure to determine belt speed should be added to the AWS Checklist of Publication 14. Andrea Buie and Bill Fishman agreed to draft a proposal for the Weighing Sector’s consideration. The Sector was asked to consider adding the following procedure to Publication 14.

Proposed Changes to Publication 14:

Methods for Determining AWS Belt Speed

Laboratory Procedures

1. Optical Tachometer Method:

(To be developed by the laboratories at a later date.)

2. Stopwatch and Tape Measure Method:

Determine the length (one full revolution) of the scale belt in meters. Mark the edge of the belt and determine the time (to within one 100th second) for a minimum of 20 revolutions of the scale belt.

The scale belt speed = $(L \times R)/T$,

where L = length of the scale belt (one full revolution)

R = the number of revolutions (from the first full revolution)

T = the total elapsed time

Belt speed shall be determined in the laboratory to the nearest 0.001 m/s.

The maximum allowable error using this method, under laboratory conditions, is +/- 2%.

2.1 The belt speed, determined in the laboratory, equals or exceeds the marked belt speed +/- 2 %?

Yes ~ No ~ N/A ~

Discussion: Several members indicated that an optical tachometer is probably more accurate than a stopwatch even if the tachometer does not have a certificate of traceability. One member stated that belt speed should be measured only when the system reaches optimum speed. This could require as many as 50 revolutions on a long belt. One member noted that the uncertainty in the method used to determine belt speed is not critical. A speed measurement accuracy within 10 percent of actual speed may be acceptable.

Conclusion: The Sector agreed that the proposed stopwatch and tape procedure should be added to Publication 14 as follows. The NTEP Laboratories should continue to develop the optical tachometer method and submit a proposal to the Sector for consideration.

Methods for Determining AWS Belt Speed

Laboratory Procedures

1. Optical Tachometer method. (This section is under development.)

2. Stopwatch and Tape Measure Method:

Determine the length (one full revolution) of the scale belt in meters. Mark the edge of the belt and determine the time (to within one 100th second) for a minimum of 20 revolutions of the scale belt.

The scale belt speed = $(L \times R)/T$,

where L = length of the scale belt (one full revolution)

R = the number of revolutions (from the first full revolution)

T = the total elapsed time

Belt speed shall be determined in the laboratory to the nearest 0.001 m/s (0.01 m/min).

The maximum allowable error using this method, under laboratory conditions, is +/- 2%.

2.1 The belt speed, determined in the laboratory, equals or exceeds the marked belt speed +/- 2%?

Yes ~ No ~ N/A ~

22. Test Criteria for Semi-automatic Zero

Source: Maryland NTEP Laboratory

Background: At the last NTEP Laboratory meeting, the Maryland S&R Laboratory requested a review of the Measurement Canada Test Method 1-3 for LG-15.03. Canada Test Method 1-3 for LG-15.03 allows a scale to zero up to 4% of scale capacity without reducing the total capacity of the device. OIML R76 limits the effect of zero-setting and zero-tracking mechanisms to 4% of scale capacity. After that review, the laboratories agreed to recommend that the Weighing Sector forward a proposal to the S&T Committee to update Handbook 44 to bring it into harmony with OIML and Measurement Canada requirements.

Recommendation: The Sector was asked to review the following proposal and consider forwarding it to the S&T Committee:

Add the following paragraph to NIST Handbook 44, 2.20 Scales, S.2.1. Zero-Load Adjustment:

S.2.1.X. Range of Zero-Setting Mechanisms

The overall range of a semiautomatic zero-setting mechanism and an automatic zero-tracking mechanism shall not exceed 4 percent of the maximum device capacity, unless the maximum gross load that can be weighed is decreased by an amount equal to or greater than the amount in excess of 4 percent of the maximum capacity adjusted by either mechanism.

Discussion: One member recalled that when the mutual recognition program was being established with Canada, this specific requirement could not be harmonized. There were comments that the proposed change might limit the usable capacity of some longer vehicle scales.

Conclusion: The Sector was divided on forwarding this item to the S&T committee or carrying it over to the next meeting to allow for additional study. The Sector voted to carry the item over by a vote of 8 to 4 and asked the SMA Technical Committee to provide feedback on the item prior to the next Sector meeting.

23. Indicators with Option for Multiple Load Receiving Elements

Source: NIST/OWM

Background: During several recent NTEP evaluations, manufacturers have installed a single load receiving element with an indicator that has the capability of displaying the weight values from more than one load receiving element; this results in a system that can indicate with more than one range that have different values for “d.” There is some concern that a vehicle scale could be installed in the field with this configuration. At the last NTEP Laboratory meeting, the laboratories agreed that if an indicator that is capable of displaying the weight value for more than one load receiving element is installed with a single load receiving element, the system should be equipped with a sealable means to prevent the use of this option in a fraudulent manner. The laboratories agreed that the option of displaying multiple load receiving elements should be added to the list of sealable features in publication 14. They also agreed to develop a proposal for changes to publication 14 and/or Handbook 44 to present to the Weighing Sector.

Recommendation: The laboratories proposed to the Sector that the option for multiple load receiving elements be added to the list of sealable parameters on page 31 of Publication 14, Digital Electronic Scales.

Discussion: It was pointed out that, during the initial indicator setup, each platform selection would require calibration and the selection of the value of “d” for the platform. Calibration and value of “d” are both sealable parameters, so by default, multiple weighing elements may be a sealable function now without specifically being added to the list. One member stated that this could be handled through training weights and measures field inspectors. If this is to be added to Publication 14, the Sector members would like to see specific language.

Conclusion: The Sector agreed to carry over this item and asked that the laboratories to develop specific wording for any Handbook 44 changes to be submitted to the S&T committee.

24. Recorded Representation of Count Items on ECR Systems

Source: Maryland W&M

Background: Maryland W&M reported finding instances of ECR receipts with items by count expressed in a decimal format with as many as three places to the right of the decimal. At the last NTEP Laboratory meeting, other laboratories indicated finding similar receipts. Paragraph 3.7 on page 9-11 of Publication 14, ECRs/Retail Motor-Fuel Dispensers, states that decimal expressions of count are acceptable. The Checklist for ECRs Interfaced with Scales does not refer to using a digital format for items by count on the receipt. The laboratories agreed that language should be added to Publication 14 to indicate that a decimal expression of count on the receipt from an ECR interfaced with a scale is not appropriate. Andrea Buie (MD) agreed to draft language for Sector consideration. The Sector should consider if the proposed changes to Publication 14 are appropriate. The Measuring Sector will also be asked to consider this issue at its next meeting.

Discussion: The Sector Technical Advisor, Dick Suiter (NIST), showed an example of 3.000 @ 3/1.00 for items being sold by count. Tom Ahrens (NIST), technical advisor to the Measuring Sector, stated that the Measuring Sector reviewed this issue at its meeting on September 24-25, 1999. The manufacturers present at the Measuring Sector meeting did not think that eliminating the trailing zeros would cause a problem. Dennis Krueger (NCR) stated that the problem began with ECR's in service stations. The software was written to print to a resolution of 0.001 gallon. When the system applications expanded into deli operations, the same software routines were continued. It would not be a problem for NCR; however, Mr. Krueger indicated he could not speak for other manufacturers. Other members agreed that it would not be a problem for their companies. Before the Sector proposes a change to Publication 14, Sector members agreed that other potentially affected parties should be made aware of the proposed change.

Conclusion: The Sector decided that the technical advisor, Dick Suiter, should develop specific language for changes to Publication 14 and a proposal for the S&T committee for changes to Handbook 44. It was agreed that a ballot should be sent to members of the Weighing and the Measuring Sectors once the language is developed.

25. Location of ID Information Required by Handbook 44, G-S.1. Identification

Source: Ohio NTEP Laboratory, NIST

Background: Jim Truex (Ohio) reported that another NTEP Laboratory asked where the marking information required by G-S.1. was found during the evaluation of a point-of-sale system that had been evaluated by the Ohio laboratory. During field evaluation of the same model officials complained that the required markings are located behind a door. The CC for the device explains where the markings are located; however, field officials contend that, without knowing the model designation from the ID plate, they don't know which CC to try to locate. At the time of the evaluation, the Ohio laboratory determined that the markings met the requirements of Handbook 44 and Publication 14. NIST/OWM concurred with this interpretation. The NCWM S&T Committee reviewed Paragraph G-S.1. in 1985 due to similar questions relating to the location of required markings on weighing elements installed in check-out stands. The Committee determined that required markings could be located under a scale platter or behind a door if no tool is required to access the markings. The Sector is asked to review paragraphs G-S.1. and G-UR.2.1.1. to determine if NTEP's previous interpretation of the requirement is correct.

Discussion: The Sector generally agreed that the interpretation was correct. One member suggested that a good alternative would be a simple label indicating where the marking requirements can be found.

Conclusion: The Sector supports the interpretation. The Sector also agreed to add a note to Publication 14 that, if required markings are behind a door or panel, the manufacturer is encouraged to put a label on the outside of the device that explains where the ID information is located. Such a marking is not required, nor does it have to meet permanence requirements.

26. Screen Saver on Customer Information Displays

Source: California NTEP Laboratory

Background: The manufacturer of a point-of-sale system contacted Steve Cook to find out "if California has a requirement that the scale live/gross weight must 'always' be displayed." Steve responded that California does not

have any special requirements for screen savers. In the past, California has requested that the display be active any time an operator is logged on. If the register is inactive long enough to activate a screen saver, it must also automatically log off the operator. The Sector should consider whether requirements similar to those applied to "sleep modes" should be added to Handbook 44 and/or Publication 14 to address screen savers on point-of-sale systems and other indicators.

Recommendation: The Sector was asked to review the following proposal for addition to NIST Handbook 44 and consider forwarding the proposal to the S&T Committee.

Modify Handbook 44, 2.20 Scales, S.1.1. (c) as follows:

- (c) A zero- balance condition may be indicated by other than a continuous digital zero indication, provided that an effective automatic means is provided to inhibit a weighing operation or to return to a continuous digital indication when the scale is in an out-of-balance condition. (Added 1987)

Examples of indications other than a continuous digital zero may include a scale ready enunciator, a sleep mode, or a screen saver.

Discussion: The Sector discussed the similarities between screen savers and a sleep mode. Dennis Krueger (NCR) stated that for some POS systems, the screen saver may function independently from the scale. The screen saver is generally in place to save the CRT. In those systems, weighing is inhibited if the scale is not on zero. Based on G-S.6., Publication 14 specifies that a sleep mode option must include a legend adjacent to the display that states that the sleep mode indicates the device is on zero. A concern was indicated that if a device inhibits weighing when the device is not on zero, a legend stating that sleep mode indicates the device is on zero might be in conflict. It was generally agreed that if a screen save mode is treated the same as a sleep mode, no changes would be required to Handbook 44.

Conclusion: The Sector agreed that it is appropriate to treat a screen saver mode identically to a sleep mode and no change to Handbook 44 is needed. The same requirements and safeguards apply. Wording should be added to Publication 14 to recognize a screen saver mode as an alternative to the continuous digital display of zero. The Sector asked the laboratories to review marking requirements for a sleep mode and to determine whether a conflict exists with the alternative to inhibit weighing if the device is not on zero.

27. Manual Gross Weight Entries on Vehicle Scales

Source: NIST/OWM

Background: Wes Diggs (Virginia) and Will Wotthlie (Maryland) both reported finding recent installations of vehicle scales with the ability to enter manual gross weight entries. Handbook 44 lists four instances for scales where manual gross weight entries are allowed. Vehicle scales are not included in that list. Several manufacturers of indicators have certificates with the option of manual gross weight entries. The Sector was asked to consider a proposal to add the option of manual gross weight entries to the list of sealable parameters. The Sector was also asked to consider if Section 2.20, Paragraph UR.3.9. should be modified to clearly state that vehicle scales are not allowed to have manual gross weight entries.

Recommendation: Add the option for manual gross weight entries on Class III/IIIL indicators to the list of sealable parameters on page 31 of Publication 14, Digital Electronic Scales and forward the following proposal to the S&T Committee to consider.

Modify Handbook 44, 2.20 Scales, UR.3.9. as Follows:

UR.3.9. Use of Manual Gross Weight Entries. –

Manual gross weight entries are permitted for use in the following applications only: (1) in point-of-sale systems interfaced with scales when credit is being given for a weighed item; (2) when a device or system is generating labels for standard weight packages; (3) when postal scales or weight classifiers are generating manifests for packages to be picked up at a later time; and (4) on livestock scale systems that generate weight tickets to correct erroneous tickets. (Added 1992)

[Note: Vehicle scales do not meet any of the above criteria for manual gross weight entries.]

Discussion/Conclusion: The Sector Technical Advisor, Dick Suiter (NIST), provided background on UR.3.9. outlining the four instances when manual gross weight entries are allowed on weighing systems. Vehicle scales were clearly not intended to be included for allowance of manual gross weight entries. Several Sector members gave examples of applications where manual gross weight entries on vehicle scale systems are appropriate for correcting erroneous weight tickets similar to the allowance for livestock scales. The majority of the Sector agreed that Handbook 44 should be changed to allow for manual gross weight entries on vehicle scales. The Sector considered two options for changing Handbook 44 as follows: Option 1 would remove the word livestock from UR.3.9. (4) and Option 2 would add “and vehicle scale systems” after “livestock” in UR.3.9. (4). The Sector voted on both options. The vote on option (1) was 10 in favor, 4 opposed, 1 abstained. The vote on option (2) was 10 in favor, 1 opposed, 3 abstained.

The Sector agreed to forward both options for changing Handbook 44, UR.3.9., including the vote on the options. The Sector favors adding vehicle scales to the applications allowed to use manual gross weight entries.

Option 1:

UR.3.9. Use of Manual Gross Weight Entries. - Manual gross weight entries are permitted for use in the following applications only: (1) in point-of-sale systems interfaced with scales when credit is being given for a weighed item; (2) when a device or system is generating labels for standard weight packages; (3) when postal scales or weight classifiers are generating manifests for packages to be picked up at a later time; and (4) on livestock scale systems that generate weight tickets to correct erroneous tickets.

(Added 1992)

Option 2:

UR.3.9. Use of Manual Gross Weight Entries. - Manual gross weight entries are permitted for use in the following applications only: (1) in point-of-sale systems interfaced with scales when credit is being given for a weighed item; (2) when a device or system is generating labels for standard weight packages; (3) when postal scales or weight classifiers are generating manifests for packages to be picked up at a later time; and (4) on livestock and vehicle scale systems that generate weight tickets to correct erroneous tickets.

(Added 1992)

28. Shift Test Pattern for Scales Based on the Number of Load Cells

Source: Darrell Flocken (Mettler-Toledo)

Background: During a recent evaluation of a Mettler-Toledo scale, a question arose regarding the appropriate pattern for conducting a shift test. The question was resolved for that evaluation, but Darrell Flocken thought that Publication 14 should be changed to clarify the appropriate test pattern to be used for various devices when conducting a shift test. Darrell recommends that Section 55 of Publication 14 be removed and replaced with the current wording of Part 1 – General Information, Section 14 of the Measurement Canada Laboratory Manual, January 1997 edition. The Sector should consider this proposal and decide if it concurs. (A copy of the General Information, Section 14 of the Measurement Canada Laboratory Manual is available by contacting the Sector Technical Advisor, Dick Suiter [NIST].)

Discussion: The Sector Technical Advisor, Dick Suiter (NIST), showed examples of current shift test patterns. Various members of the Sector provided opinions related to the appropriate shift testing of single load cell and four load cell designs. One member was concerned that the Measurement Canada Laboratory Manual provides for a shift test on hopper and tank scales; however, Publication 14 does not require a shift test on hopper and tank scales.

Conclusion: The Sector decided to readdress this issue at its next meeting. The Sector also asked the SMA technical committee to review the current shift test patterns and provide feedback to the Sector prior to the next Sector meeting as to what is appropriate.

29. AAR Requirements for Railway Track Scales

Source: NIST/OWM

Background: When the USDA Grain Inspection Packers and Stockyards Administration completes an evaluation of a railway track scale, it submits the report to NIST/OWM to draft the CC. The report indicates whether or not the device was evaluated for compliance with the Association of American Railroads (AAR) Scale Handbook as well as an indication that the device meets the requirements of the FGIS Weighing Handbook and NIST Handbook 44. The Sector is asked to consider whether or not reference to these three documents should be listed in the test conditions on a CC. The Sector may also want to consider whether or not railway track scales submitted for NTEP evaluation should be required to meet AAR design requirement. For example, a Cooper E80 rating on the weighbridge of a device submitted for NTEP evaluation might be required before a CC will be issued.

Discussion: Several Sector members expressed opinions that NTEP should not be concerned with the requirements of other agencies. NTEP should evaluate only for compliance with Handbook 44. Other members felt that additional requirements and information on a CC would benefit weights and measures officials and potential purchasers of equipment.

Conclusion: The Sector agreed that no additional statements should be added to NTEP Certificates of Conformance relative to requirements other than Handbook 44.

30. Permanence Test Requirements for Class I Scales

Source: Ohio NTEP Laboratory

Background: Canada requires a permanence test for class I scales. A list of devices and elements that may not require permanence testing is located on page 1-77 of Publication 14. Class I scales are included on this list. When this list was developed, some of the NTEP Laboratories did not have the ability to do an automated permanence test on class I scales.

Conclusion: NTEP has designated the Ohio laboratory for testing all class I scales. Ohio now has the capability to perform the automated permanence test. Consequently, the Sector agreed that the reference to class I scales be removed from the list of devices and elements that *may* not be subject to permanence testing.

Location of Next Meeting:

The Sector agreed to tentatively schedule the next meeting for September or October 2000 in Columbus, OH.

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Appendix A-1 to October 1999 Weighing Sector Meeting Summary

64 Performance and Permanence Tests for Vehicle Scales and Permanently Installed Axle-Load Scale Weighing Elements

Note: Please refer to device application for vehicle scale checklist

Performance tests are conducted to determine compliance with the tolerance and, in the case of nonautomatic indicating scales, sensitivity requirements specified in NIST Handbook 44. The tests described here apply only to the weighing element. It is assumed that the indicating element used during the test has already been examined and found to comply with the applicable requirements. If the performance of the indicating element is to be determined during the same examination, the applicable requirements for weighbeams and poises, dials, electronic digital indicators, etc., must be referenced.

64.1 Tests For Single-Wide Vehicle Scales and Permanently Installed Axle-Load Scale Weighing Elements

Initial Type Evaluation (Field) Performance Tests

The minimum amount of known test weight needed for the initial type evaluation test is equal to at least 90 percent of the concentrated load capacity of the scale. Substitution testing may be used to reach the necessary test load.

64.1.1 Indicator Tests

Beam Scales

If the indicating element is a weighbeam and poise, sensitivity tests should be conducted as follows:

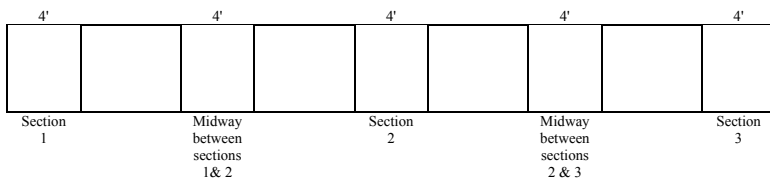
The sensitivity tests are conducted at zero load and at the maximum test load. The sensitivity test is conducted by determining the actual test weight value needed to bring the beam from a rest point at the center of the trig loop to rest points at the top and bottom of the trig loop. The maximum load applied to a scale to determine sensitivity near scale capacity does not have to be a known weight.

Digital Indicator

If the indicating element is a digital indicator, width-of-zero tests, zone of uncertainty tests, and appropriate tests for the automatic zero-setting mechanism (if so equipped) should be conducted as indicated in other sections of this document.

64.1.2 Shift Tests

64.1.3 An example of the four-section scale:



64.1.3.1. At least two complete sets of shift tests shall be conducted over each section to at least 90 percent of the concentrated load capacity (CLC) of the scale. This is to determine the repeatability of the scale. The scale error should be determined at a minimum of five equally spaced test loads. Scale errors may be determined at more points if desired. If two weight carts are used, they should travel along the paths the wheels of a vehicle would take when moving across the scale. Decreasing load tests

are to be avoided when testing a section. A truck may not be backed onto the scale in order to place weights on the inner sections. Decreasing load tests shall be conducted after the sections have been tested to their maximum load and the weights are being removed from the scale. Do not exceed the CLC capacity. The load is to be distributed across the section.

- 64.1.3.2. At least one complete set of shift tests to at least 90 percent of the CLC shall be conducted at mid-span between sections.
- 64.1.3.3. If a scale consists of modules that are connected together to comprise the weighbridge, shift tests shall be conducted by placing the load so that it straddles the connection between the modules. Later, at least one shift test is to be conducted on the scale with the test load is placed first on one side of the connection line of the module, then on the other side of the connection line.
- 64.1.3.4. The results of shift tests are required to agree within the absolute value of the applicable maintenance tolerances and must be within acceptance tolerances.

64.1.4. Strain Load Test

- 64.1.4.1. At least one strain load test shall be conducted at each end of the scale. The maximum load applied during the strain load shall be in the range of 80 to 100 percent of scale capacity. The load is to be distributed over the load receiving element.
- 64.1.4.2. Load the scale with a vehicle or vehicles so the addition of test weights will provide a gross load of 80 percent to 100 percent of scale capacity. Determine the "reference point" for the start of the strain load test. Add the test weights to one of the ends of the scale without exceeding the CLC.
- 64.1.4.3. Do not conduct a decreasing load test or a return to the strain load reference weight as part of this particular strain load test. After removing the test weights from the end of the scale, reestablish the strain load reference value and reapply the test weights to verify that the strain load values repeat the initial values. Conduct a decreasing load test and return to the strain load reference value as the weights are removed as part of this test cycle. The return to the strain load reference value shall be within one-half of a scale division with consideration given for the creep and for any temperature changes that may have occurred during this last test cycle.
- 64.1.4.4. Remove the known test weights and the strain load. Zero the scale, place the strain load on the other end of the scale, and establish the strain load reference value. Do not use the zero-setting mechanism to set the strain load to zero; the tare mechanism may be used to tare out the strain load. The gross load zero value is needed to conduct a decreasing load test as the strain load is removed in the next test.
- 64.1.4.5. Repeat the strain load test on the other end of the scale. After reaching the maximum test load for the strain load test, remove the strain load but leave the known test weights on the scale. The weight indication for the decreasing load test must be within tolerance for the known test load. Continue the decreasing load test by removing the known test weights. Take several readings as the weights are being removed. When all the weights are removed, record the return to zero. The scale must return to zero within one-half of a scale division. When analyzing the return to zero, consideration must be given for the length of time the load was on the scale and for possible temperature changes that may have occurred during the test.
- 64.1.4.6. Acceptance tolerances are applied only to the known test load in the strain load test.

64.1.5. Subsequent Type Evaluation (Field) Permanence Tests

- 64.1.5.1. A minimum of 40 000 lb of known test weights are needed, or 50 percent of the CLC, whichever is greater.
- 64.1.5.2. At least one complete set of section tests shall be conducted over each section and at mid-span between each section using the known test weights.

- 64.1.5.3. At least one strain load test shall be conducted at each end of the scale. The maximum applied load shall be in the range of 65 percent to 100 percent of scale capacity.
- 64.1.5.4. The time between the initial field performance test and the subsequent field test will be 20 to 30 days. Performance during both tests must be within acceptance tolerances.
- 64.1.5.5. If a device fails subsequent permanence tests, the entire permanence test must be repeated.

64.1.6. Caution Regarding Load Concentration

Concentrating large loads on scale platforms by using weight carts or test equipment using hydraulic jacks may exceed the maximum pound per square inch load specification for the deck. This condition may arise because the small tire area of the weight cart in contact with the deck surface could result in a very large load concentration over an unusually small area. This could cause damage to the scale deck.

This situation may occur with a weight cart having a very narrow or short wheel base and small solid rubber tires. This is particularly likely to cause a problem on steel plate decks and could also result in damage to manhole covers. If the load capacities of weight carts are increased beyond 25 000 lb, while maintaining solid tread wheels, it is possible that some concrete decks could be damaged.

64.1.7. Permanence Test Use Requirement for Vehicle Scales

- 64.1.7.1. A minimum of 300 weighing operations are required during the test period. The manufacturer is to log the date, time, and weight. Each entry is to be initialled by the person conducting the weighing.
- 64.1.7.2. Only loads which have been applied using a method representative of the scales intended use can be counted.
- 64.1.7.3. For vehicle scales with a nominal capacity over 75 000 lb:
 - 64.1.7.3.1. 50 percent of the loads must be above 50 000 lb or 80 percent of the CLC, whichever is greater; and
 - 64.1.7.3.2. 100 percent of the loads must be above 20 000 lb or 50 percent of the CLC, whichever is greater.
- 64.1.7.4. For all other scales:
 - 64.1.7.4.1. 50 percent of the loads must be above 50 percent of the scale capacity; and
 - 64.1.7.4.2. 100 percent of the loads must be above 20 percent of the scale capacity.
- 64.1.7.5. The minimum number of days that a device is required to be in use is 20. The committee did not specify that certain number of weighing operations needed to be conducted each day for the test period, but recommended that use of the scale be representative of normal in service use.
- 64.1.7.6. The device will be tested to the CLC on the second test.

64.2. Tests For Double-Wide Vehicle Scales Weighing Elements

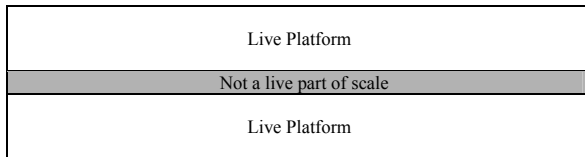
In addition to the testing listed above, tests should be conducted using equipment that closely replicates the actual intended use of the scale. For instance, if the scale is intended to weigh heavy off-road vehicles, several weighments of a loaded off-road vehicle should be conducted in several positions and in both directions on the scale system to establish repeatability.

Multiple pattern loading should be considered in a manner consistent with the intended use.

Examples of Double-Wide or Side-by-Side Vehicle Scales

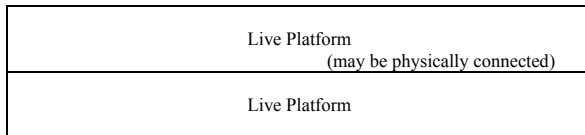
Example 1: Side-by-side installation with a dead section located between the two live sections

Each side of the scale system is a complete and independent scale weighing element. If installed with the dead section level with the weighing element this section must be identified as such. It may be a raised curb and/or be equipped with reflectors or painted a noticeable color to call attention to the center part of the scale.



Example 2: The same as example 1 except that there is no divider between the scale platforms.

The two (or more) platforms act as a single platform and are tested as one scale.



64.2.1. Indicator Tests

Beam Scales

If the indicating element is a weighbeam and poise, sensitivity tests should be conducted as follows:

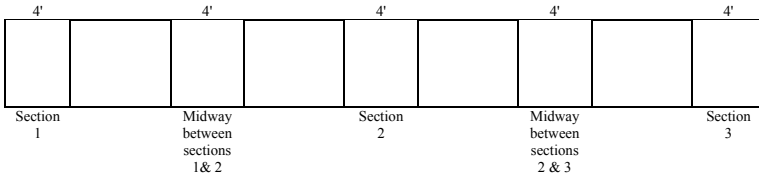
The sensitivity tests are conducted at zero load and at the maximum test load. The sensitivity test is conducted by determining the actual test weight value needed to bring the beam from a rest point at the center of the trig loop to rest points at the top and bottom of the trig loop. The maximum load applied to a scale to determine sensitivity near scale capacity does not have to be a known weight.

Digital Indicator

If the indicating element is a digital indicator, width-of-zero tests, zone of uncertainty tests, and appropriate tests for the automatic zero-setting mechanism (if so equipped) should be conducted as indicated in other sections of this document.

64.2.2. Shift Tests

64.2.3. An example of the four-section scale:



64.2.3.1. At least two complete sets of shift tests shall be conducted over each section on each individual platform to at least 90 percent of the concentrated load capacity (CLC) of the combined scales. When loading the scales do not exceed the CLC capacity for the individual platforms. This is to determine the repeatability of the scale. The scale error should be determined at a minimum of five equally spaced test loads. Scale errors may be determined at more points if desired. If more than one weight cart is used, they should travel along the paths the wheels of a vehicle would take when moving across the scales. Decreasing load tests are to be avoided when testing a section. A truck may not be backed onto the scale in order to place weights on the inner sections. Decreasing load tests shall be conducted after the sections have been tested to their maximum load and the weights are being removed from the scale. The load is to be distributed across the section.

64.2.3.2. At least one complete set of shift tests to at least 90 percent of the CLC of the combined scales shall be conducted at mid-span between sections. When loading the scales do not exceed the CLC capacity for the individual platforms.

64.2.3.3. If a scale consists of modules that are connected together to comprise the weighbridge, shift tests shall be conducted by placing the load so that it straddles the connection between the modules. Later, at least one shift test is to be conducted on the scale with the test load placed first on one side of the connection line of the module, then on the other side of the connection line.

64.2.3.4. The results of shift tests are required to agree within the absolute value of the applicable maintenance tolerances and must be within acceptance tolerances.

64.2.4. Strain Load Test

64.2.4.1. At least one strain load test shall be conducted at each end of the scales. The maximum load applied during the strain load shall be in the range of 80 percent to 100 percent of scale capacity. The load is to be distributed over each of the individual load receiving elements.

64.2.4.2. Load the scale with a vehicle or vehicles so the addition of test weights will provide a gross load of 80 percent to 100 percent of scale capacity. Determine the “reference point” for the start of the strain load test. Add the test weights to one of the ends of the scales without exceeding the CLC of each individual platform.

64.2.4.3. Do not conduct a decreasing load test or a return to the strain load reference weight as part of this particular strain load test. After removing the test weights from the end of the scale, reestablish the strain load reference value and reapply the test weights to verify that the strain load values repeat the initial values. Conduct a decreasing load test and return to the strain load reference value as the weights are removed as part of this test cycle. The return to the strain load reference value shall be within one half of

a scale division with consideration given for the creep and for any temperature changes that may have occurred during this last test cycle.

64.2.4.4. Remove the known test weights and the strain load. Zero the scale, place the strain load on the other end of the scale, and establish the strain load reference value. Do not use the zero-setting mechanism to set the strain load to zero; the tare mechanism may be used to tare out the strain load. The gross load zero value is needed to conduct a decreasing load test as the strain load is removed in the next test.

64.2.4.5. Repeat the strain load test on the other end of the scale. After reaching the maximum test load for the strain load test, remove the strain load but leave the known test weights on the scale. The weight indication for the decreasing load test must be within tolerance for the known test load. Continue the decreasing load test by removing the known test weights. Take several readings as the weights are being removed. When all the weights are removed, record the return to zero. The scale must return to zero within one half of a scale division. When analyzing the return to zero, consideration must be given for the length of time the load was on the scale and for possible temperature changes that may have occurred during the test.

64.2.4.6. Acceptance tolerances are applied only to the known test load in the strain load test.

64.2.5. Subsequent Type Evaluation (Field) Permanence Tests

This criteria applies if:

- 1) The pattern or model has never been evaluated.
- 2) The performance indicates that further evaluation is necessary.
- 3) The design is such that the application of loads near the center of the individual weighing elements affects the weighing operation.

The Subsequent Type Evaluation (Field) Permanence tests may not apply if:

- 1) The pattern or model has been evaluated previously and it can be demonstrated that the weighing performance is not affected by the different loading pattern.

Test Procedure:

64.2.5.1. A minimum of 40 000 lb of known test weights are needed, or 50 percent of the CLC, whichever is greater.

64.2.5.2. At least one complete set of section tests shall be conducted over each section and at mid-span between each section using the known test weights.

64.2.5.3. At least one strain load test shall be conducted at each end of the scale. The maximum applied load shall be in the range of 65 percent to 100 percent of scale capacity.

64.2.5.4. The time between the initial field performance test and the subsequent field test will be 20 to 30 days. Performance during both tests must be within acceptance tolerances.

64.2.5.5. If a device fails subsequent permanence tests, the entire permanence test must be repeated.

64.2.6. Caution Regarding Load Concentration

Concentrating large loads on scale platforms by using weight carts or test equipment using hydraulic jacks may exceed the maximum pound per square inch load specification for the deck. This condition may arise because the small tire area of the weight cart in contact with the deck

surface could result in a very large load concentration over an unusually small area. This could cause damage to the scale deck.

This situation may occur with a weight cart having a very narrow or short wheel base and small solid rubber tires. This is particularly likely to cause a problem on steel plate decks and could also result in damage to manhole covers. If the load capacities of weight carts are increased beyond 25 000 lb, while maintaining solid tread wheels, it is possible that some concrete decks could be damaged.

64.2.7. Permanence Test Use Requirement For Vehicle Scales

64.2.7.1. Minimum weighment requirement:

1) For scales which operate only in double-wide use a minimum of 300 weighing operations are required during the test period.

2) For scales that can operate in both a single and double-wide use one individual scale must meet the 300 weighments requirement; and, there shall be a minimum of 100 weighments in the double-wide use.

The manufacturer is to log the date, time, and weight. Each entry is to be initialled by the person conducting the weighing.

64.2.7.2. Only loads which have been applied using a method representative of the scales intended use can be counted.

Appendix A-2 to October 1999 Weighing Sector Meeting Summary

TO: Weighing Sector
FROM: Dave Quinn, Fairbanks Scales
DATE: 9/9/99
SUBJECT: Application of CLC Rating

On behalf of Fancor companies, Fairbanks Scale and Thurman Scale, I request the NTEP Weighing Sector review the present test procedures for evaluating the Concentrated Load Capacity (CLC) of a vehicle scale. It would appear that the present procedures used in NTEP evaluation are a misapplication of the CLC definition.

The definition of CLC adopted by NCWM is capacity rating of a vehicle scale, specified by the manufacturer, defining the maximum axle load concentration on a group of two axles with a centerline spaced 4 feet apart and an axle width of 8 feet for which the weighbridge is designed. This definition is consistent with load concentration used by the Federal Highway Administration in the design of bridge spans to accommodate the axle load configurations of legal highway vehicles, therefore has sound technical basis.

TEST PATTERNS

When NCWM discussions opened on the subject of CLC in about 1987 a method of verifying the manufacturers specified design load was a necessary part of the discussion. It ultimately was decided to use a strain load test pattern defined as a minimum of 4 feet by the width of the scale. This made sense at the time because the normal vehicle scale offered in the market place was 10 feet to 11 feet wide. With the maximum vehicle width of 8.5 feet allowable on U.S. highways there was no reason to believe scales would get wider. This has turned out to be a bad assumption for there are farm vehicles that are as wide as 13 feet and are used in commercial applications. While this application is limited, wider scales were required and were submitted for NTEP approval. At first, these wider vehicle scales were submitted with the same CLC designation as the 10 feet to 11 feet versions because the design load for two axles on 4-foot centers did not change. However the NTEP evaluation did change, instead of applying a test load pattern that was 10 feet to 11 feet wide the pattern was spread out over the 14-foot width of the scale resulting in less concentration of load. This in itself was not a problem because the manufacturers CLC designation was the same.

The problem began when manufacturers decided to take advantage of the test pattern and submit wider scales and claiming high CLC. These manufacturers defined CLC as the maximum weight concentration, designated by the manufacturer, that could be placed in a test pattern 4 feet by the width of the scale for NTEP evaluation. In most cases this was clearly not the manufacturers specified design load for two axles on 4-foot centers 8 feet wide.

Manufacturer "A" recently received a C of C for a line of vehicle scales 14 feet wide with a CLC rating of 90,000 pounds. The marketing material issued with the product release states the following:

"It is important to understand that the manufacturers set the amount of weights to be used in NTEP testing for their scales, and the total is directly related to the CLC assigned to the scale. The CLC rating resulting from an NTEP test is only a measurement of how well the load cells (and load cell suspensions) react to large loads placed on a scale deck in a 4-foot by 14-foot area. When a CLC load is applied to the weighbridge during an NTEP test, the NTEP tester records the displayed weight. If the scale falls within acceptance testing tolerance, the scale has that CLC weight value recorded as the CLC on the CC." This manufacturer was issued a private brand certificate to manufacture scales covered under a C of C issued to manufacturer "B" making exactly the same claims.

Manufacturer "C" is a spin off of manufacturer "B" and predictably uses exactly the same comments in their release except they raise the ante to a CLC of 100,000 pounds.

Manufacturer "D" states in their product promotion "CLC is defined as a pattern 4 feet wide across the width of a scale deck. Our models (sic) are available in both 70 000 lb and 110 000 lb Concentrated Load Capacity. CLC is defined as a pattern 4 feet wide across the width of a scale deck. Their (sic) literature states "Each module is designed for minimal deflection while loaded by a 65 000 lb tandem axle with a 48-inch spread. Their (sic) price pages state "80 000 lb tandem axle capacity," and a larger "120 000 lb tandem axle capacity." Using sources to

determine what these comments meant it was determined that “NTEP allowed claiming a CLC that was 5 tons above that approved during test of a specific scale.”

It could be assumed that these manufacturers are not well informed on NCWM/NTEP definitions except that the technical support data defines the load carrying capacity of a dual axle as different that two axles on 4-foot centers 8-feet wide. Manufacturers “A” and “B” specify that the design load for their scale is based on “45 000 pounds per axle based on the axle pattern of a Euclid R-50.” As shown on the attached material, a Euclid R-50 has two axles on 12-foot 3-inch centers with a width of approximately the same dimension. One can use the Handbook 44 table UR.3.3.1 to calculate the true CLC from this data. If the design is for two axles on 12-foot 3-inch centers instead of the CLC defined 4-foot centers, it is required that the 12-foot 3-inch dimension be rounded to the next higher whole foot which is 13 feet. The table indicates an “r” factor of 1.265 for two axles in 13 feet. To determine the CLC based on 4-foot centers divide the 90 000-lb design load by the “r” factor and the result is 71 000 plus, not 90 000 as claimed on the CC.

Manufacturer “C” raised the dual axle capacity by claiming 50 000 lb per axle based on the wheel base of a Euclid R-50. Using the same rationale divide 100 000 by 1.265 and the result is a true CLC of just below 80 000 lb.

Side By Side Scales

The most recent apparent misapplication of the CLC definition has to do with scales placed side by side for weighing wide “off highway vehicles” such as the Euclid R-50. In one case, a CC was issued to a company that submitted two scales with a previously approved CLC of 80 000 lb. The CC approval rated the resulting scale at double the 80 000 lb CLC or 160 000 lb CLC. This rating would imply that the resulting combination is designed for 160 000 lb on two axles with 4-foot centers on the same load receiver previously approved for only 80 000 lb on the two axles on 4-foot centers.

Conclusions:

Based on the above it would appear that NTEP evaluations of vehicle scales:

1. Are not evaluating based on existing definitions in Handbook 44.
2. Lack the technical expertise to evaluate the true design criteria of a device based on the Handbook 44 definition.

Recommendations:

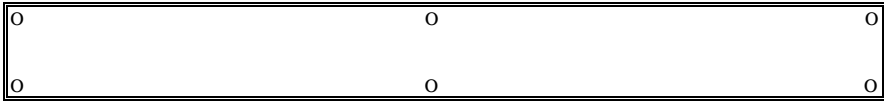
1. Change the Shift Test Pattern to agree with the definition of CLC (4 feet by 8 feet).
2. Require a manufacturer asking for NTEP to submit design calculations from a registered Professional Engineer (PE) substantiating the design load for two axles on 4-foot centers with an 8-foot width.

If some action is not taken, CLC will become a marketing bullet instead of a useful suitability requirement as intended by NCWM.

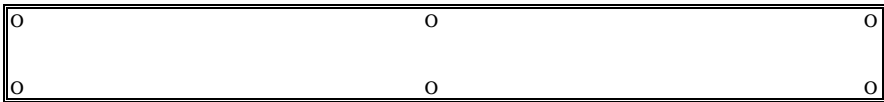
**Appendix A-3 to
October 1999 Weighing Sector Meeting Summary**

Examples of “Double-Wide” Scales

Example 1



DEAD SPACE BETWEEN SCALES



(O = load cell or lever load point)

Each side of the scale is a complete weighing element. The center divider is not part of the weighing element. It must be marked, a raised curb, and or equipped with reflectors or painted to call attention to the area that is not part of the weighing elements.

The scale can be tested in any manner that replicates the actual usage. For example:

Combination highway and extra wide vehicle application would require the scale be tested as

- 1) two individual scales,
- 2) a “double-wide” scale using multiple pattern loading, and
- 3) using two different test loads applied to each section and/or midsection that straddles the two weighing elements. This may require that the tare weight of a test vehicle be determined using the substitution method as the first weight, and test weights be added to the test vehicle as the second test load.

“Extra wide vehicles only” application would require the scale be tested as

- 1) a “double-wide” scale using multiple pattern loading, and
- 2) using two different test loads applied to each section and/or midsection that straddles the two weighing elements. This may require that the tare weight of a test vehicle be determined using the substitution method as the first weight, and test weights be added to the test vehicle as the second test load.

Example 2

The “double-wide” scale shares the same pit and cannot be used as two individual scales.

O	O	O
O	O	O
O	O	O
O	O	O

The scale can be tested in any manner that replicates the actual usage. For example:

Combination highway and extra-wide vehicle application would require the scale be tested as

- 1) a “double-wide” scale using multiple pattern loading,
- 2) using two different test loads applied to each section and/or midsection that straddles the two weighing elements. This may require that the tare weight of a test vehicle be determined using the substitution method as the first weight, and test weights be added to the test vehicle as the second test load, and
- 3) using the test vehicle and test load, roll one side of the vehicle on top of seam between the two weighing elements. This will help confirm that there is no binding between the weighing elements.

An “extra-wide vehicle” application would require the scale be tested as

- 1) a “double-wide” scale using multiple pattern loading, and
- 2) using two different test loads applied to each section and/or midsection that straddles the two weighing elements. This may require that the tare weight of a test vehicle be determined using the substitution method as the first weight, and test weights be added to the test vehicle as the second test load.

Example 3

The previous procedures can be applied to modular scales in addition to applying a test load on the right or left side of any connection point or directly on top of a connection point.

O	O	O	O	O
O	O	O	O	O
O	O	O	O	O
O	O	O	O	O

Acknowledgements

The Resolutions Committee did not meet at the 85th NCWM Annual Meeting because only one member of the Committee was present; consequently, there is no Resolutions Committee Report for 2000. However, during the NCWM, Inc., Annual Business Session, Chairman Wes Diggs thanked the following individuals and groups who contributed their time and talents to ensure the success of the 85th Annual Meeting:

- (1) J. Carlton Courter, III, Commissioner of the Department of Agriculture and Consumer Services, Commonwealth of Virginia, for his welcome to the participants and guests of the NCWM;
- (2) Sergeants-at-Arms Vernon Lee Massey, Shelby County Weights and Measures, Memphis, TN, and Randell Musser, Virginia Product and Industry Standards, for their assistance during Conference sessions;
- (3) Rich Kayser, Director of Technology Services at the National Institute of Standards and Technology (NIST), for his remarks to the membership;
- (4) Committee members for their efforts throughout the past year preparing and presenting their reports; the subcommittees and work groups for their discerning and appropriate recommendations;
- (5) Regulatory officials of State and local jurisdictions for the advice, interest, and support of weights and measures administration in the United States;
- (6) Representatives of business and industry for their cooperation and assistance in committee and Conference work; particularly thanks to Frances P. Holland for arranging this year's Bowl-A-Rama;
- (7) NCWM Headquarters staff for their dedicated assistance in planning and conducting the work and program of this Annual Meeting, especially to Beth Palys, CAE; Beverly Levy, CAE; Amy Omang; and Lynn DiTizio; and
- (8) NIST Office of Weights and Measures Technical Advisors, other OWM staff members, and Henry Oppermann, OWM Chief and NCWM Executive Secretary, for their participation in the meeting and continued support of the work of the NCWM and its constituency.

Report of the Nominating Committee

Aves D. Thompson, Chairman
Director, Alaska Division of Measurement Standards/CVE

Reference
Key No.

800

The Nominating Committee met prior to the Interim Meeting at the Hyatt Regency Hotel, Bethesda, MD, at which time the Committee nominated the following persons to be officers of the 86th National Conference on Weights and Measures. In selecting nominees from the Active membership, the Committee considered professional experience, individuals' qualifications, Conference attendance and participation, and other factors considered to be important.

The Nominating Committee unanimously voted to select the following slate of officers:

CHAIRMAN-ELECT: * Ronald Murdock
North Carolina Department of Agriculture

BOARD OF DIRECTORS
CENTRAL REGION: Darryl Brown
State of Iowa

TREASURER: Thomas F. Geiler
Town of Barnstable, MA

*Chairman-Elect Richard D. Greek, County of San Luis Obispo, CA, resigned due to an employment opportunity outside of the weights and measures community. The Nominating Committee reconvened and nominated Ron Murdock of North Carolina as Chairman-Elect.

A. Thompson, AK, Chairman

B. Bloch, CA
S. Colbrook, IL
C. Gardner, Suffolk County, NY
T. Geiler, Barnstable, MA
N. D. Smith, NC
J. Truex, OH

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New Chairman's Address

Louis E. Straub Chief, Maryland Weights and Measures Section

Thank you for the kind remarks, Wes. Please remain here with me at the podium.

During the past 12 months I have had the opportunity to observe your chairman "up close and personal." Because of our proximity, Wes and I have probably spent more time working together and discussing the operation of the Conference than any other chairman and chairman-elect. This was a tremendous help to me as I prepared for my new role. Wes has answered every challenge, and leaves the Conference in a healthier position as we move forward into the new millennium. Wes, on behalf of the membership of the National Conference on Weights and Measures, it is my pleasure to present you with this plaque commemorating your service as chairman.

Good morning, everyone. I feel very fortunate to have spent my entire professional career in the weights and measures arena. In those 27 years I have worked as a weights and measures field inspector for Prince George's County, MD, a scales and weighing specialist for U.S. Department of Agriculture Packers and Stockyards Administration, and the last 18 years with the Maryland Department of Agriculture, Weights and Measures Section. This path has also allowed me to work for and learn from some of the best people in Weights and Measures: Chuck Oakley, Dick Thompson, Lacy DeGrange, Paul Peterson, and Ken Butcher.

When I began my Weights and Measures career in 1973, I didn't realize that an organization that impacts so many people on a day-to-day basis existed, much less, that one day I would be asked to serve as its chairman. It is truly an honor and a privilege; I thank you.

One of the first things you realize when you begin the year as chairman-elect is that 12 months later you have to be prepared to make this address. I will try to follow the advice that a university president once gave a prospective commencement speaker. "Think of yourself as a body at an Irish wake," he said. "They need you in order to have the party, but no one expects you to say very much."

But more importantly it signals the end of another successful Conference. Everyone should be proud of the work we accomplish, it is a total team effort with government and industry working together -- what a unique concept.

Before I go any further I would like to recognize two members of our Conference. Ronald Murdock, Program Manager, Measurement Standards Division, North Carolina Department of Agriculture, is your new chairman-elect, and Allan Nelson with NW Associates has been elected Chairman of the Associate Membership Committee. Ron, Allan, and I are anxious to tackle our new responsibilities, but we need your feedback to be successful. Please feel free to talk with us as the year progresses.

I believe every chairman feels compelled to review earlier Conference reports. I found one common element in every report, the Office of Weights and Measures (OWM) and the Conference coping with change. This year is no different. In every relationship there will be changes; however, the point is both partners have to change. I believe that commitment is now a reality. For that reason I have selected the following theme for the year: "Success Through Communication and Cooperation."

I have decided this year to focus on our "work in progress." These are not new items, but I think it is crucial that we successfully address these issues.

1) National Type Evaluation Program (NTEP) - I believe the transfer of the NTEP management is one of the most important challenges to face the Conference and OWM. I am happy to report that both partners have been working hard to ensure a smooth and complete transition. We are on schedule to meet our October 1, 2000, transition date. The selection of an NTEP Director is our "missing piece of the puzzle." We will complete our final interviews for this position at the end of this Conference and expect to make a selection shortly. I have asked Wes Diggs as Chairman of the NTEP Committee to make the rewrite of the Administrative Section of Publication 14 his number-one priority. Alan Johnston of Measurement Canada and I have discussed the renewal of the U.S./Canada Mutual Recognition Agreement for Weighing Devices. We will begin work on this project after the October 1, 2000, NTEP transition is completed.

New Chairman's Address

2) NIST Handbook 133 - Henry Opperman and I have discussed the importance of completing this project. Henry has assured me that his staff will complete the 4th draft in mid-October with Carroll Brickenkamp conducting the final review. This should allow enough time for the draft to be circulated to all interested parties and discussed at this year's Interim Meeting.

3) The "R" words, "Remanufactured," "Reconditioned," and "Repaired" - Everyone understands the issue; we need to come to an understanding. The Remanufactured Device Task Force will meet at the conclusion of our session this morning. Chairman Jim Truex has promised to have a proposal available in August; this will allow each regional association the opportunity to comment.

4) NIST Handbook 44 - I have asked your new chairman-elect Ron Murdock to continue to oversee the Handbook 44 Working Group. Revising the handbook will not be an easy task, but I think everyone agrees it is a project that needs to be addressed. Our field inspectors need a handbook that is easy to use and understand.

I have only mentioned four issues this morning, Ron Murdock and I have other items for discussion that we will bring to the regionals. We look forward to your comments.

In order to continue the work of the Conference, it is my pleasure to make the following appointments:

Administration and Public Affairs Committee: Bruce Adams, State of Minnesota, 1 year to fill Richard Philmon's term, and Mike Sikula, State of New York, a 5-year term;

Board of Directors: Dennis Ehrhart, State of Arizona, 1 year to fill Ron Murdock's term as Ron assumes his new position as chairman-elect;

Laws and Regulations Committee: Larry Hatfield, State of Kentucky, a 5-year term;

Specifications and Tolerances Committee: Jack Kane, State of Montana, a 5-year term;

Credentials Committee: Larry Stump, State of Indiana, a 3-year term;

Parliamentarian: Bruce Adams, State of Minnesota, a 1-year term; and

Chaplain: Mike Hile, State of Arkansas, a 1-year term.

I have a few remaining appointments; I will make them prior to the 2001 Interim Meeting in Phoenix, Arizona.

To all of the new appointees, thank you for accepting the challenge; I look forward to your support and participation.

In closing, this year as chairman-elect has been a true learning experience. There have been a lot of ups and downs, but there was always one constant that I could rely on: you, the membership of the Conference. We have a great organization; if we cooperate and communicate we can succeed.

I would like to quote Benjamin Franklin, "Well done is better than well said." I will try to follow this advice as your chairman. Thank you.